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Original Department.

Therapeutic Gazette Collective Investigation of Diphtheria.

WE publish herewith the additional answers which have been received to the following questions submitted to the readers of the THERAPEUTIC GAZETTE in the March number. The replies are given in the order of their receipt:

1. What is your opinion in regard to the local or constitutional nature and treatment of diphtheria?

2. On what clinical facts, observed by you, do you base your opinion?

3. What is your opinion as to the contagiousness of diphtheria?

4. What facts in your experience bearing upon this question?

5. What microscopical examination, if any, have you made of the diphtheria membrane?

6. What measures, if any, have you adopted by way of prophylaxis, and what success has attended those efforts?

7. What local treatment have you found most efficacious?

8. What general treatment has been most successful in your hands?

U. S. NAVAL DEPARTMENT,
WASHINGTON, D. C.

I do not think I can answer your questions to better advantage than by sending the following copy of paper embodying my views, read before the Naval Medical Society. Dr. J. H. Kidder, U. S. N., has promised to send you his microscopical notes on the disease.

Yours most truly,
A. A. HOEHLING.

It would be mere repetition on a well-worn subject if I were to say much in relation to the symptoms of diphtheria. I will, therefore, confine myself to a few practical remarks which are suggested to me by such cases as have come under my care, leaving my friend, Dr. Kidder, to repay you for your kind attendance this evening by an ocular demonstration of some interesting investigations in this field of research with the microscope, as well as by a graphic description of his labors in this direction.

The number of cases of the disease treated by me amounts only to fifteen under my sole care, and four to whom I was called in consultation; of the latter one died, of the former none ended fatally.

I believe this favorable result largely due to my belief that the disease begins locally, and to a course of thorough parasiticide treatment consequent to this view, carried out from the moment I recognize the disease.

I prefer the tincture of the muriate of iron, undiluted, applied three or four times daily with two or three large camel's hair pencils. Brandy, half ounce, every two hours for an adult; the atomization of lime water every hour or two, a gargle containing chlorate of potash, carbolic acid and sulphurous acid, used every hour, and nourishment day and night, are the essential items in the cure of the cases.

Of course other treatment, and much of it, was applied to meet such indications as appeared in the course of individual cases.

It is reported in Jacobi's last work on this affection, that pseudo-membranous tracheitis can be produced by placing the exudation matter of diphtheria in the tracheæ of animals; then why cannot the same thing occur in the human subject by auto-inoculation with exudation inhaled from the throat?

If this is a fact, the early disinfection of the exudative material ought to prevent the membrane from appearing in the wind-pipe in many cases; of course after serious blood infection, the membrane may appear in the air tubes from within the system itself.

In not one case treated by me from the beginning, has the disease attacked the larynx or trachea or bronchial tubes, and I believe this to be due to very early disinfection of the throat.

That it is a sewer gas disease I firmly believe. An attaché of the British Legation died here recently of this disease at lodgings. He had a sore throat some days before infection, and I find a sewer on the corner of the street abreast of his lodgings, which often smells very badly, and we know that a sewer need not even have a foul odor in order to scatter abroad the germs of disease.

One of the worst cases of the complaint I ever treated, was exposed for a brief period to the emanations from this same sewer while suffering a mild attack of tonsillitis; in four days diphtheria set in.

On one of our best streets in the older portion of the city, three cases have recently been under my care in two blocks; one not well at present, though a mild case. I have been informed of other cases on that street, but never rely upon hear-say evidence. It is possible that the appearance of these cases is accidental, but it is not unlikely that the main sewer is in a bad state. Of course I suppose no one doubts that stationary wash-stands are an abomination and dangerous to life.

About the sixth to the eighth day of the disease, I have observed the pulse and temperature to fall below normal, sometimes as low as 95° Fahr. for the latter, and 50 for the former; but more generally the temperature ranged from 97° to 98° Fahr., and the pulse from 60 to 65 per minute.

This leads me to doubt the propriety of using the old stand-by in the disease: chlorate of potash, internally, and I now never use a potash salt internally in any but the smallest dose in this affection. There is often fatty degeneration of the heart later on in the disease, and we know that potash enfeebles the heart's action, which we should avoid in such a condition. The same objection holds good against the old-fashioned "beef-essence" boiled in a bottle, and containing little else in solution than potash and other saline constituents of the blood, which has been reported to have killed rabbits in Germany, from heart paralysis induced by the potash salts. Beef tea answers very well as a part of the diet, however. When the heart appears to lack strength, and a little loss of sensibility apparently comes on in the throat, as is shown by a want of feeling when the brush is applied, I at once give five drops or more of tincture of nux vomica, three times daily. When nervous weakness occurs I use musk internally, and if the pulse is very feeble give carbonate of ammonia, or ether, 20 drops every hour or two, or the aromatic spirits of ammonia.

To aid in getting rid of the membrane nothing appeared to do so well as Bartholow's plan, viz., bromide of ammonium, grs. 5, and iodide of ammonium gr. j, in water every four hours. To prevent blood poisoning I used his remedy, viz.:

℞ Liquor iodinii comp., ʒ iij
Acidi carbolici purif., ʒ j.

M. S. Of this give one drop in water every three hours.

Tincture of iron in large doses proved of benefit in some cases, where there was anæmia particularly. Poultices externally, and the inhalation of the vapor from slaking lime gave much ease.

Numerous forms of gargle were used, and all did quite well. I like those containing sulphurous acid best. The posterior nares were syringed when required, with dilute solution of chlorinated soda, or Labarraque's solution.

After the membrane peels off I have the raw surfaces dusted by insufflation of the flowers of sulphur every hour or two. As the brushing with tincture of iron is painful, the patient is requested to swallow pulverized ice immediately after each brushing, and this is very grateful to the throat.

Tonic doses of quinine were used, and in some cases atomization with a saturated solution of muriate of quinine, as advised by Bartholow.

My experience with the local application of lactic acid was bad; the only case I saw die had this applied almost solely; this was a case I saw in consultation; the disease invaded the wind-pipe, and the membrane returned as largely as before, after each occasion when the lactic acid had loosened a flake of it. I think the lactic acid may dissolve the membrane without disinfecting the base from which it springs, while the tincture of iron goes below the surface and destroys the poison root and branch; its astringent action also diminishes the nutrition necessary to keep up a supply of false membrane, by reducing the blood supply in the constringed capillaries. When I used lactic acid in my own cases I found it useless and soon dropped it entirely. Glycerole of carbolic acid does pretty well, but is not equal to the favorite tincture of iron. After the membrane has completely disappeared I brush the throat with glycerole of tannic acid for a couple of weeks to restore its tone, and thus prevent the chronic sore throat which diphtheria generally leaves behind for a good while. When I leave the patient I order a tannin gargle to replace the application before mentioned. The most important point to remember after that of disinfecting the throat, is that this is an asthenic disease, and that

the patient must be fed and stimulated, and generally sustained, day and night, with great assiduity, else a case simple at first may become grave before the end.

I keep my nurse and patient so completely employed during the disease that one recently enquired earnestly if it was not time to do something or other, as nothing had been done for half an hour.

With regard to tracheotomy I have no personal experience. From my reading and the knowledge of cases thus treated by others, I made the following request of my friend, Surgeon General Wales, when I was daily treating severe cases of the disease: "If I get diphtheria, I wish you to open my throat the moment hoarseness appears, sufficiently to indicate that the membrane is likely to form in the wind-pipe." As this agreed with his own views, he promised to do so. As I would have this done to myself, I, of course, agree with the French, that early tracheotomy is almost essential to its success; the late operation I have little faith in—it succeeds sometimes, we know, but not often. Whether I would treat patients as I would have myself treated, depends upon their consent; I would advise it undoubtedly, because the disease is so very fatal when it reaches the wind-pipe, that surgical interference is justifiable; with all its risks it offers a better chance for life than the disease treated otherwise allows. In cases of great debility, especially after loss of blood from tracheotomy, I would insist upon the horizontal position being maintained for some days, to prevent death from heart clot, a not uncommon mode of death in diphtheria, even without an operation.

In relation to the contagiousness of the disease, I believe this to have been much exaggerated. I never knew anyone to take it in this way, and cannot hear anything confirmatory of its great contagiousness from my medical friends. I have had my face soiled by the patient coughing into it when I pushed the brush down the throat, on numerous occasions, but washed off in water at once; have inhaled foul smelling breath while examining the throat, and have passed hours in a room with a patient without ever having had the disease; though I had fever, sore throat and a bad scare once, it proved a false alarm, I am glad to say. A nurse who held a baby in her arms most of the time for two weeks, had but a slight tonsillitis at the end of this period. A mother who cracked a large piece of ice in her mouth which her daughter had found too large to swallow, escaped; the woman's mouth was washed with a disinfectant at once, however. The poison may act somewhat like the vaccine virus, which requires a properly abraded surface, some care in application and retention and a certain condition of system to make it take, as we all know from experiencing numerous failures with the most highly recommended bovine points winter after winter. Where many members of one family have had the disease at the same season, I believe they all were infected from the same original cause. That the blood becomes diseased in all cases where the poison has been located for a time I also believe, but I think we may even then keep the local manifestation, viz., membranous exudation, from spreading extensively, as may be seen in so many cases where it does not invade dangerous regions. May this not be another analogy to vaccinia, where the pustule, however virulent in appearance and course, is rarely repeated elsewhere than at the point of vaccination or insertion of the virus? To carry out the analogy, we have cases of diphtheria that run a fatal course, where the membrane invades the more distant bronchial tubes, the larynx and trachea, the labia of females even, as well as other parts, and no treatment is of avail to cure or limit the spread of the exudation. Just so I have seen a multiple eruption from bovine vaccination on two occasions, on the last of which I was accused of having given the infant the "small-pox!" The first child was a sight to behold; the arm at the original site of insertion was inflamed in its whole length, and the two points of insertion over the end of the tendon of the deltoid muscle were as deep as if cut out with a punch; there were three pustules on the face and chin, and the fever was very severe. Both children recovered completely and are proof against small-pox I believe.

Thanking you for your inexhaustible patience I will bring to a close a paper which has grown much longer than I anticipated it would do when I wrote at the beginning of this article that I would "confine myself to a few practical remarks."

ADOLPH A. HOEHLING, M. D.,
Surgeon U. S. Navy.

WASHINGTON, D. C.

5. During the epidemic of diphtheria which prevailed in Washington a year ago, I had frequent opportunities for examining both the pharyngeal exudations and blood of patients in the practice of Surgeon-General Wales, and Drs. Hoehling and Rixie, of the Navy, and made many photo-micrographs of the appearances presented.

I consider it a proven fact that, whether *post hoc* or *propter hoc*, certain micrococci similar to those which abound on the healthy buccal mucous membrane have been seen in the blood, especially inhabiting the leucocytes, of severe cases of diphtheria (Letzerich, and Wood and Formad). It appeared furthermore to have been settled by the experiments of Drs. Curtis and Satterthwaite, that filtration of diphtheritic virus destroys it activity, which remains in the matter filtered out from the fluid parts.

Relying upon these facts, I undertook the investigation, under instructions from the Surgeon-General in the hope of so identifying and figuring the micrococcus that it could be discriminated from other, normal, constituents of the blood or mucous by any physician accustomed to the use of the microscope.

As your space must necessarily be very limited, I will state the results as briefly as possible:

1. Thirteen slides of pharyngeal exudation, from six cases of diphtheria (two fatal) were examined. Micrococci were found in all these, usually in large numbers, but differing in no sensible characteristic from those common in healthy saliva. Five attempts at culture in sterilized mutton bouillon all failed, perhaps because of the local active treatment, which has been described by Dr. Hoehling, and which was very likely to have destroyed the micrococci. So far as my observations go, the microscope affords no trustworthy indications to the diagnosis of diphtheria by examination of the pharyngeal exudation.

2. Twenty-two specimens of blood were examined from three cases, all of which recovered. In two of these full series were obtained, at short intervals up to complete convalescence. A drop of blood from the finger or lobe of the ear was spread evenly upon a thin cover and allowed to dry. When examined

by a power from x 700 to x 1200, with an excellent Zeiss' 1-18 homogeneous immersion objective, the following appearances have been noted:

a. Numerous irregular reddish granules, as in all blood.

b. Small spherical leucocytes, not larger than the red corpuscles, in the interspaces of the thicker parts of the coagulum. These noted only upon days when the disease was at its worst.

c. Spherical or nearly spherical granules, measuring about 1-2100 inch, colorless, often still indicating by their mode of aggregation, the outline of a leucocyte, and often observed in the blood of other diseases and of health. These granules have been supposed to be the result of the breaking up of leucocytes, but it is to be noted that they fall within the limits of size of the *micrococcus diphtheriticus* (1-14000 to 1-42000 inch., Wood & Formad) and might easily be mistaken for it.

d. Smaller granules, averaging 1-40000 inch in diameter, similar in appearance to the foregoing, and apparently of similar origin. Less often seen elsewhere than in diphtheritic blood.

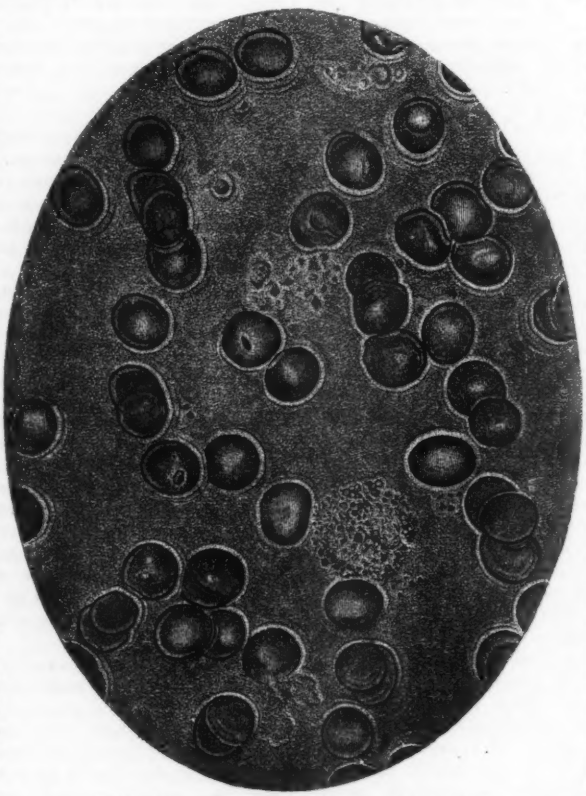
e. Extremely minute granules, too small to be measured, filling the interiors of the leucocytes, and not, up to this time, noticed by me in the blood of other diseases or of health.

f. Small spherical bodies, of a distinct red color when a little beyond the focus, sometimes in pairs, often aggregated upon the leucocytes, and similar to those observed in scarlatina and in the exanthemata generally. (See note on scarlatina and typhoid fever blood, by J. H. K., published with photo-micrographs by the surgeon-general of the navy.) Their nature is still unknown to me, but is apparently quite different from that of the colorless granules already mentioned.

g. The cases were generally leucocythæmic, continuing to be so in one severe case until convalescence had been well established.

h. It was further noted that in many of the specimens the crenulation of the red corpuscles in drying has been observed to take the form of spherical knobs which closely resemble similar loose red spherules in the field. A red corpuscle sometimes appears to be dotted with such spherules, which are not to be distinguished optically from those observed upon leucocytes.

Of these different appearances only the minuter granules within the leucocytes, the red highly refracting spherules loose in the field and attached to leucocytes, and the small leucocytes (*b*) have been observed to correspond with the severity of the clinical phenomena. It is not certain that the blood of either of the cases examined by me contained the "micrococcus diphtheriticus" at all, as all recovered, and the organism is not claimed as present in the blood in any but severe cases. It is scarcely possible that all of the forms just described can have been micrococcus, and at least four of them correspond to published descriptions. I send you a photograph of one of the affected leucocytes, as to which Dr. Wood has written to the surgeon-general: "The bodies in the white corpuscle are, I believe, micrococci." I think so also, but am far from being convinced by the observations just noted, that the organisms deserve the specific name often given them, as bearing a causative relation to the disease under discussion, and to that only.



LEUCOCYTE FROM DIPHTHERITIC BLOOD. 4TH DAY. X 10,000

What has been already written appears to answer question 5, fully, as far as my observations go, and I will refrain from crowding your space with a statement of the inferences they have suggested. The observations themselves, although exceedingly laborious, have come to so little in the way of addition to our exact knowledge of the subject, that I should not have thought of presenting them but for Dr. Brown's request.

J. H. KIDDER, M. D.,
Surgeon U. S. Navy.

Because of its frequency and fatality, diphtheria has a record in every county of West Virginia scarcely less calamitous than that which has been written upon the hearts of the people during the last half century by scarlet fever.

Under different names—"putrid sore throat," "malignant ulcerous sore throat," "black tongue,"

etc.—diphtheria, no doubt, prevailed thirty-five or forty years ago in the territory now belonging to West Virginia. The first general outbreak occurred in the year 1857, and covered a period of about four years, the epidemic reaching its height, both in extent of its visitation and fatality, in 1859.

During those years many examples of cutaneous diphtheria were met, in which the characteristic exudation involved the extremities, the eyes, ears, and other unusual parts. In 1858, while a resident of Philippi, Barbour county, I saw three fatal cases in which the disease attacked the feet and ankles, the fauces showing neither much redness nor congestion, nor any well-marked exudative deposit. I have also seen several cases of vaginal diphtheria, and another case in which the pudendum of a little girl was the surface attacked, without any apparent accompanying trouble in the throat.

Paralysis is both a frequent accompaniment and sequel of diphtheria, *e. g.*, the difficulty in swallowing liquids, and the nasal voice during the course of the disease; and weakness of vision, or absolute loss of sight, loss of power to use the limbs, after the establishment of convalescence and clearing of the throat from all appearances of the disease. I remember the following case:

R. F., æt. 20 years, suffered a severe diphtheria, and after so far recovering as to be able to go out of doors, suddenly became weak-sighted—unable to read large pica print—and during the next twenty-four hours lost the use of his lower limbs. Under the influence of tinct. ferri chloride, sulph. quinine, nux vomica, and galvanism, he recovered in twelve months.

I have known several cases in which after convalescence had been established and continued for two weeks or more, paralysis of the velum palati supervened and was most rebellious to treatment. In my experience, diphtheritic locomotor paralysis occurs with greatest frequency in patients above 15 years of age, and in that class of patients we find also the greatest number of cases of impaired vision.

There are few physicians of experience who have not witnessed the occurrence of sudden death by syncope in diphtheria. There is great danger of such a termination upon very slight physical exertion, even after convalescence is reached and all signs of the disease have disappeared from the throat.

Death from diphtheritic croup has, happily, been rare in my experience. I have never known but one case of recovery after the larynx and trachea had become thus involved—a little girl, 3 years of age, who swallowed 80 grains of calomel in 3 days and nights. Death by asthenia is the common mode, and it may take place as early as the third day, or as late as the fourth or fifth week from the date of the attack.

The disease has prevailed at all seasons and appeared equally independent of all atmospheric conditions and terrene dependencies; and its fatality has greatly varied in different places without any cause having been discovered to wholly and satisfactorily account for such difference in severity.

That diphtheria is more or less actively contagious, there can, I think, be no doubt. In proof, I could, if necessary, produce many carefully collected examples. In ill-ventilated houses diphtheria produces an atmosphere sometimes so intensely infectious as to strike down all who come within its poisonous influence. Hence the very great importance of thorough and constant ventilation or dilution with fresh air.

It is not uncommon for diphtheria and scarlet fever to prevail simultaneously in the same neighborhood. In not a few instances I have seen both diseases at the same time in the same family; and, now and then, have recognized both diseases affecting the patient at the same time.

Ordinarily the diagnosis of diphtheria is not difficult. It rests mainly upon the existence of a false membrane in the fauces, which has a tendency to spread beyond the limits of the pharynx into its various outlets; its grave and peculiar constitutional symptoms; its singular chronicity; its remarkable sequelæ; its tendency to sudden death. But notwithwithstanding great and irreconcilable differences which separate the specific character of diphtheria from all other diseases, mistakes in diagnosis are continually made. It is not every chamois or ash-colored speck or patch on the tonsils and soft palate that is diphtheritic—very far from it, indeed; and it may be charged truthfully, no doubt, that the failure to discriminate between the true and the false deposit is the parent of the wonderful success we sometimes hear of in the management of diphtheria—so-called. The diseases with which it may be confounded are sthenic pharyngitis, tonsillitis, aphthous inflammation, croup, and scarlet fever.

The successful treatment of diphtheria embraces both local and general means, which, of course, must be varied in activity to suit the particular case; and thus suiting the treatment to the present condition—giving the patient the benefit of hygienic as well as medical treatment. My own experience warrants the belief that there is no other equally dangerous disease more manageable, or which, in a given number of cases, more often results in recovery. The following is an outline of my general plan of treatment:

a. Cleanliness. To diminish the media of infection, the body and bed clothing should be changed daily. The sick room should be bare of unnecessary furniture, and especially of drapery, and, if possible, have an open fire-place, and a fire burning on the hearth or in the grate, if the weather is too cool to have the doors and windows thrown constantly open. There is not the least danger of "catching cold" in bed, if the patient is well clothed. Segregation of the sick is absolutely necessary, and the bed should be so situated that fresh air from out of doors may blow over it and thoroughly dilute the foul air of the room.

b. Feed the patient, allowing beefsteaks and animal broths or soups, boiled milk, gruels, jellies—indeed, any kind of nutritious food which the appetite may crave, including ice creams, etc. When food can no longer be taken by the stomach, nutritive enemata—beef juice, etc.,—must be employed. These are usually well retained after one or two efforts at this mode of feeding.

c. For drink, ice-water in small quantity at a time, or if there be much redness and swelling of the fauces, pounded ice in teaspoonful quantities, iced-milk, ice-cold lager beer, or ale or porter may be given *ad libitum*.

d. The success of medical treatment depends very much upon its being begun early in the attack. It is remarkable how little complaint is made, especially by children, of sore throat, even when the attack is

of a serious character; and for that reason the exudation, though extensive, is frequently overlooked by the parents or nurse until it is pointed out by the physician. If the bowels are constipated, they should be opened with magnesia, or the compound liquorice powder, or other simple laxative. If, on the contrary, diarrhœa is present, then from three to thirty grains of subnit. bismuth (according to the age of the patient) with prepared chalk and a few drops of strong tincture of cinnamon, should be given every three or four hours.

e. If the case has been ushered in with nausea and vomiting, and these troublesome symptoms continue, either a dose of the simple aromatic spirits of ammonia, or from three to five drops of chloroform paregoric in a tablespoonful of ice water, should be administered every half hour. The following is the formula for the latter:

℞ Chloroformi,
Tinct. opii,
Spts. camphoræ,
Spts. ammon. aromat., ää f ʒ iss.
Creasoti, gtt. iij.
Olei cinnamomi, gtt. vij.
Alcoholis, f ʒ ij.

M. If constipation exist at the same time a stimulating enema should be employed.

f. If the glands are much involved, and the throat is hot and swollen, a warm wet cloth, or a poultice of baked potatoes, folded on a piece of oiled silk cloth, should be applied around the neck and this means of local bathing and sweating continued without intermission until the symptoms are controlled and give way, or until the condition of the patient is hopeless.

g. Experience has abundantly satisfied me that the use of strong caustics is not proper; that in numerous cases such applications aggravate all the symptoms and thus greatly endanger the patient. The tinctura ferri chloridi may be applied in full strength to the diphtheritic patches and around their borders by means of a large hair pencil, possibly with advantage; but even this I have generally abandoned during the last ten years, and now content myself with gargles or atomized spray of a mixture of chlorine and iron:

℞ Pot. chlor., ʒ ij.
Acid hydrochlor. purif, ʒ iss.
Aquæ, ℥ vij.
Tinct. ferri chloridi, ʒ j.

M. Apply every hour or two. At the same time this mixture may be internally administered in the dose of from 15 drops to a teaspoonful, according to the age of the patient, in water, with or without a little simple syrup, every hour or two, and there may be added to the dose, if need be, sulph. quinine. Instead of the chlorine and iron mixture, I have used with equal success the hyposulphite of soda—from five to twenty grains every three hours—in simple syrup, alternating with a dose, five to twenty drops, of a mixture of equal parts of tincture guaiaci, myrrhæ and capsici, in milk every three hours. I was led to try this plan of treatment by reading a paper in the Boston Medical and Surgical Journal, June 8, 1876, page 657, under the caption "Diphtheria Successfully Treated," by Dr. Chenery, of Boston.

h. Besides chlorine and iron, hyposulphite of soda, quinine, and various local applications, diphtheria frequently requires strong alcoholic stimulants, administered with a bold hand to prevent collapse. In no disease is there greater tolerance of wine and stronger alcoholic drinks than in diphtheria, and the guide to the amount in which these should be administered, is their effect in each case.

i. During the advanced stages of the disease the patient is constantly in danger of fatal syncope, and should therefore be carefully guarded against physical exertion or sudden change to the erect posture. In other words, keep the patient quietly in bed.

10. The uncertainty of convalescence should not be forgotten. This period may be variously interrupted, and protracted for many weeks, after all marks of the disease have disappeared from the throat.

In cases of paralysis of the soft palate, the danger of choking in taking food should be constantly borne in mind, and the patient warned accordingly. I have known one patient to die suddenly at the table from choking on solid food. Should the paralysis involve the limbs, and vision also fail and become imperfect, iron, quinine, strychnia, galvanism and patience will be required. Strychnine may be given with pepsin as follows:

℞ Strychnine, gr. ss
Acid muriatic, dil. f ʒ ij
Liq. pepsin, q. s. ad f ℥ jv.

M. S. A teaspoonful—to adults—in water immediately after each meal.

To quiet nervous restlessness both during the course of the disease and period of convalescence, bromide of pot. or sodium, with ergotine, is worthy of the highest confidence.

Finally, I ask what is there in this history of diphtheria, and the plan of treatment of this disease, that can encourage belief that it—diphtheria—and the cynanche trachealis, of Cheyne, are one and the same disease?

JAMES E. REEVES, M. D.,
Secretary W. Va. State Board of Health.
WHEELING, W. Va.

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1. There is no doubt in my mind that diphtheria is an originally constitutional disease.

2. In the great majority of cases, diphtheria makes its appearance independently, unaccompanied by, or unaccompanying other diseases, although it may be associated with divers diseases of the skin, measles, scarlatina etc., and even then by the superficiality of the medical attendant a severe bronchial catarrh or highly sore throat may often be mistaken for it. Yet no intelligent man would pronounce scarlatina or morbilli, because possibly aggravated by diphtheritic exudation, local diseases any more than he would typhus abdominalis, this dyscrasia generally manifesting itself by localization in the lower third of the ileum in the solitary follicles and in the plexus of the Peyer's glands. A badly degenerated blood is the cause, the exudation and localization of the fungous mass on the mucous membranes of the pharynx and vicinity, as the, no doubt, most convenient depository, is the effect of the disease. You cannot trust to topical medication alone and exclusively, or you will lose 8 or 9 patients out of every 10, but if you go to the root of the evil, you will conquer and eradicate it, and this can only be done by proper internal medication, paying the highest attention to each individual case, and considering local remedies, as

gargles and cauterizations, as mere adjuvants, whose employment for the removal of the bacterial mass will in many cases become highly imperative. Diphtheria is a constitutional disease, for in case the larynx and trachea should become affected and local remedies consequently impossible and useless, it is the constitutional treatment that alone can save the patient, notwithstanding the assertion of a great many that there is no more hope when the larynx has once become involved; and I here claim and declare, that of the 63 cases since 1864, cited by me as recovered, in my paper in February number of the GAZETTE, p. 51, 16 were of a laryngo-tracheal nature, to use the term for distinction, the oldest patient being 67 years, and the youngest 4½ years old, the average age of the 16 being about 23½ years, and the average duration of the perilous time of their sickness somewhat over two weeks.

From your remarks, Mr. Editor, in December and January numbers of the GAZETTE, I was impressed that your opinions coincided with my own as to the constitutional origin of diphtheria; permit me therefore to draw your attention to the apparent inconsistency and self-contradiction on your part in your editorial of January issue, p. 21, toward the close, where you say. "If in spite of all that can be done in this way, the larynx becomes involved, there is no chance of recovery." From this sentence it might be inferred, that in such an emergency you either have no more faith in constitutional treatment, or the case has become hopeless from the impossibility of further local treatment, which then would intimate belief in a local origin.

The false membrane is an exudate, as will be further demonstrated in regard to the local application of nitrate of silver, in answer seventh.

3 and 4. Diphtheria is not necessarily contagious, but requires a certain predisposition and susceptibility on the part of the co-inhabitants and nurses to become contaminated, for it is often the case that only one member of a numerous family will be afflicted, while all the others will, with observation of the most ordinary sanitary rules, remain unscathed, and so *vice versa*.

6. In the way of prophylaxis, in particular when diphtheria has become epidemic and then generally appears in its most vicious and malignant form, it is highly imperative to seclude those afflicted from all contact and communion, as you would small-pox patients, ventilate freely, simultaneously keeping up an even temperature of from 65° to 70° F., fumigate the rooms with burning sugar and juniper berries, to be followed by slight sprinklings on the floors of dilute carbolic acid, put in the water-closets, particularly when the night vessels are emptied thereinto, from a peck to half a bushel, as needed, of freshly slaked lime, over which sprinkle during the next few days also carbolic acid. If costive, resort to a saline aperient, Rochelle salts or liquid citrate of magnesia. Let your diet consist of fresh roast meat, dry toast with jellies and fresh fruit, and as a cold drink partake freely of lemonade (preferably with the water previously boiled and allowed to cool off again). The free and liberal use of milk I strongly object to. I further recommend, as an additional drink almost *ad libitum*, chlorate of potash (one tablespoouful for a tumblerful of water, to be filled up again with water as long as some of the salt remains undissolved, when it also has to be replaced by a new dose). An observance of the foregoing advice will never fail of success.

7. The most satisfactory and efficacious local treatment in diphtheria I have found in the gargle as described by me in the February number of the GAZETTE, p. 52, which should be used quite freely and to the purpose. In connection herewith I would say, that I also consider the chlorate of potash and sulphur mixture mentioned on page 51 of the same issue, an *ex parte* local treatment, from the fact that the excess of the potash in the form of a fine powder, insoluble in the menstruum, acts in a mechanical way on the bacterial accumulations, and the virtues of the sulphur are too well known to need further comment. In cases where the gargle as such is inapplicable, as in extreme youth, or from impossibility on the part of the patient to perform the act, I apply it freely and frequently by means of a sponge or rag, observing the greatest cleanliness.

Well remembering bitter and discouraging experience prior to 1864, I totally condemn the topical use of lunar caustic, for it will in a short time form a coating, a quasi protection, under which the exudation will continue luxuriating till death closes the scene. For the same reason I discarded long years ago silver in the treatment of chancre.

8. If in the course of events, profiting by previous experience, we have arrived at rational and logical conclusions in the treatment of diseases, we should be guided thereby in future, though always closely observant of new phenomena possibly presenting themselves. Considering diphtheria a primarily constitutional disease, originating in a badly degenerated blood, we should adopt such course of treatment as will in the quickest and safest way rehabilitate the patient, and the more simple and natural the treatment, the more laudable the success. Therefore, we have the primæ viæ in a normal condition, attend to the general comfort of the patient by giving him plenty of fresh, yet warm air, keep him in a state of perfect cleanliness, rub the extremities with a moist rag several times daily, and last but not least, act cheeringly and encouragingly upon his mind. Attempt to stimulate his appetite by offering a rich diet in the shape of fresh roast meat, fried fresh fish, dry toast, jellies or preserves, and do not hesitate to offer also, several times a day, a heavy dose of good, pure wine (catawba preferable to all others, because being least likely to be adulterated), which will never do any harm, even if possibly inducing slight intoxication. However languid and indifferent the patient may be at first, continued inviting and coaxing to such food and drink will rarely fail of the ultimate desired end. Give the chlorate of potash and sulphur mixture with expectorants, as mentioned on p. 51, February issue, which I wish to be regarded as the *princeps agens* in diphtheria, and do not become remiss in its free and uninterrupted administration. Some practitioners may have raised objections to expectorants, as non-admissible, but I value them highly as essential auxiliaries in disgorging the loosened false membranes, and should they prove insufficient for that purpose, I have then even time and again resorted to continued titillation of the fauces. In prostration and exhaustion I give quinine in doses of from one-half a grain to five grains, according to age and accompanying circumstances, every six hours, to be continued for several days if necessary. In addition to the sulphur in the regular mixture, I

often make the patient take of that substance, dry by the mouth, from one-half to one teaspoonful two or three times a day, to be swallowed gradually and at convenience.

Hot or cold water fomentations to the neck I have found very questionable, and would never recommend them; neither have I any confidence in external applications at all, as they unnecessarily inconvenience and disturb the patient.

H. STIEREN, M. D.

MASON, W. Va.

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1. I believe in both, but think the constitutional treatment of much the greatest importance.

2. I have no special clinical facts to report, beyond the general statement that I have frequently treated the disease during my twenty-five years of practice. During this time I have employed a great variety of both local and constitutional treatment, but for several years have employed hardly any other means than those named in 7 and 8.

3. I do not believe in contagion, except through immediate contact of the diphtheritic secretion with a mucous membrane.

4. Only those resulting from general observation since I have been seeing cases of the disease.

6. Practically none, beyond isolation of patients having the disease, with thorough disinfection of room and clothing of patient—generally by heat and sulphurous acid fumigation. Success has been apparently good, yet my observations have been so general as to possess no real scientific value.

7. Spraying the throat with hot water, or hot water containing soda benzoate in solution. I have saved two cases out of four after tracheotomy.

8. Supporting almost alone; using as medicines, quinia, and alcohol in some form, with as generous diet as possible.

J. R. WEIST, M. D.

RICHMOND, Ind.

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1. I believe that to treat diphtheria successfully it must be treated both locally and constitutionally.

2. From the fact that we have serious constitutional disturbances characterized by rigors, nervous prostration, albumen, urea, and sometimes progressive paralysis. Locally, to control inflammation, as the diphtheritic exudate depends on said inflammation, furnishing the soil, so to speak.

3. I believe diphtheria is in a measure contagious, especially when epidemic; but is largely confined to localities. Persons living in localities where the disease originates seem more susceptible on account of continued exposure.

4. In most towns where the disease prevails it is found more or less confined to certain portions of said towns, and persons living in other portions of the town go into the section contaminated by the the disease, with impunity. Do not think sporadic cases are contagious.

6. Have been in the habit of burning sulphur and giving it as a prophylactic; also sulpho-carb. sodium with the best of success. About a year ago, had a severe case in a family consisting of six children, five of them younger than the patient, all the way from an infant to 12 years of age. Followed the above prophylactic measures and none of the others contracted the disease. The patient contracted the disease by nursing a neighbor's child that died of the disease.

7. Having been in the habit of using hot vapors, chlorate potash, sulpho-carb. sodium and sol. nitrate silver, 20 grs. to the ounce, the latter with swab or camel's hair brush. I make the potash and sodium a part of the general treatment; also the vapor created by boiling hops, vinegar and water; also cause sulphur and soda to be blown from tube upon tonsils and into pharynx.

8. My general treatment has been calomel in 10 grain doses for the first 24 hours, say about three doses, followed with quinine, chlor. potash, sulpho-carb. sodium, tr. ferri mur.

In my hands the above treatment has proved very generally successful. Don't take much stock in the germ theory.

C. V. BEEBE, M. D.

MANISTEE, Mich.

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1. I use constitutional treatment exclusively.

2. Being a blood disease, local treatment would necessarily be useless. Further, I avoid local treatment because all abraded surfaces give rise to new exudations. Abrading can be scarcely avoided in children, because of the excessive friability of the faucial mucous membranes.

3. I regard it as very contagious. I think there is but one opinion about it.

4. I have repeatedly seen patients fall ill with it only after exposure.

6. Laxatives, quinine and generous diet. Presumptuous to speak of "success" in prophylaxis, because no one can possibly affirm how many and who would not have been smitten down with diphtheria, who had not taken these agents.

7. I used to think I saw good from lime water spray.

8. Alcohol has been given to every case of late years, and I have lost no cases. I think this may be a happening only, yet I am convinced that alcohol will accomplish what other agents will often signally fail to do. I use 10 to 30 drops in water every hour, night and day, till improvement sets in. If diphtheria be a blood poison, or ferment, or bacterium, or any other entity, alcohol acts by consuming and eliminating it. I begin its use with every conceivable confidence, except in so-called "fulminant" cases, wherein God Almighty alone can save, by direct intervention.

J. H. ETHERIDGE, M. D.

CHICAGO, Ill.

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1. In mild cases of diphtheritic sore throat, when the tonsils, uvula, soft palate and neighboring parts are covered with the membrane, having little or no tendency to extension, no treatment is required. But in the severer forms I think both general and local treatment should be used.

2. No particular clinical facts, simply on cases treated from time to time.

3. Infectious only in a limited degree.

4. Single cases often occurring in families containing many persons.

5. I consider the membrane is but altered and thickened epithelium.

6. None but fresh air, common wholesome food, ventilation of sleeping rooms, cleanliness, etc.

7. Application: tinct. ferri mur., inhaling vapors, lime water, sucking ice, poultices, blisters, etc.

8. A supporting one: Quinine, tinct. ferri mur., tinct. guaiaci, potass. chlor., olei terebinth, wine and brandy. I do not approve of tracheotomy.

GEO. M. MCMICKING, M. D.

GODERICH, Ont.

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1. I think both are important—the latter relatively much more than the former.

2. It would take much more time than I have to spare and very much more space than this sheet affords to state them.

3. It is infectious, but not contagious,—regarding the latter word as meaning personal communication from one person to another, as in small-pox.

4. All the clinical facts seen in personal attendance on cases of the disease during the last forty years.

6. As far as possible separating the sick from the well, and by cleanliness and ventilation, securing as far as possible fresh, pure air at a comfortable temperature, and good plain food. I cannot give any statistical results.

7. I have found no actual specifics, either general or local, and so much depends upon the severity, stage of progress, and extent of each case, as to the remedies best adapted to it, that to name particular remedies or modes of treatment without at the same time explaining the cases and conditions in which they may be used, is better calculated to propagate error than to inculcate correct practice.

8. For the reason just stated, I have neither time nor space here for an answer.

N. S. DAVIS, M. D.

CHICAGO, Ill.

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1. Believe the constitutional treatment is all important, and that the local should be gentle in character—enough to obviate any danger of death from suffocation.

2. From observing diphtheritic membrane forming on a wound of the face and hand, convincing me that the poison lurked in the blood and would appear anywhere; also having seen a purulent conjunctivitis follow the introduction of diphtheritic sputa into the eye; from the general depression and weakness shown in some cases of diphtheria, due, as I believe, to the prostrating effects of the poison upon the system in general.

3. Believe it to be contagious.

4. From observing that in this locality we had a larger amount the past year in the county, spreading from family to family, while in the city, by strict quarantine, it has been checked at the points of origin.

5. Have not seen anything beyond the usual amount of pus and some muscular tissue.

6. A course of tonics in a family where the disease has appeared seems to lessen the virulence of the disease when it attacks other members of the family. Above all things avoid the contagion.

7. Applications of any astringent and antiseptics by means of an atomizer, or by steaming the throat.

8. Quinine and iron, with stimulants.

BION WHELAN, M. D.

HILLSDALE, Mich.

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1. If I were obliged to confine myself to one, I should place greater reliance on the constitutional treatment; but I consider both as important.

2. It has been my observation that the constitutional symptoms were the first manifested and the last to subside; besides there is danger of blood poison, both from absorption of membrane and uremic poisoning. Further, if the patient is not treated constitutionally, he is liable to sink from exhaustion.

3. I believe it to be contagious, but not so much so as the exanthemata.

4. Quite a number of times I have known one member of a family of small children to be taken sick with diphtheria and the whole family of children would have the disease at that time, while other children who had visited them but once or twice during the sickness would escape. Those living constantly in the atmosphere of the disease, I believe are much more likely to contract it than those who are exposed only occasionally.

6. I have recommended that the sulphate of quinine be taken, about six grains a day, but can't say as I have seen any benefit from it.

7. Inhalations of medicated steam. I have used steam medicated with carbolic acid, also steam made from strong cider vinegar, 50 per cent., and water, 50 per cent., and in my hands they have been quite successful. Then give the patient great relief for the time. Many times I have seen the patient suffering so much that he could get no sleep nor rest, immediately after inhaling the steam for five minutes drop off into a quiet sleep and sleep for an hour. Besides, the carbolic acid is an antiseptic and disinfectant. I give the carbolic acid the preference.

8. Quinine, tinct. of iron, and carbolic acid, properly diluted. I also get the patient to take as much good rich milk as I can.

S. H. CLIZBE, M. D.

COLDWATER, Mich.

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1. That one case may demand local treatment, another general, a third both local and general.

2. The pharyngitis, tonsillitis, or other local disease found in nearly every case. The febrile action, of two or three days' duration, caused by the catarrhal inflammation usually present, and, if the attack is severe, by the septicæmia, paresis, or paralysis accompanying or following the attack.

3. It can only be conveyed to a person whose air passages are inflamed or abraded.

4. After two weeks sickness, a child died of the disease, in a family of five children and three adults, all of whom were exposed during the entire period; none of them had the disease. Six months after the death of the child the family suffered from catarrh, followed in nearly every case by diphtheria. Instances of this kind are common.

6. I have advised isolation, used carbolic acid, bromine and other disinfectants and supposed germicides, in the room and on the clothing of patients and of persons exposed to the disease. I

cannot say that any means used afforded immunity from an attack.

7. Gargles of hot water with chlorate of potassium, salt or sulphur, have alleviated and probably cured the pharyngitis, tonsillitis or other local disease, giving the patient an assurance of having something done for him, satisfied impatient friends, and what is of more importance, have not done any harm.

8. I have tried to avoid routine treatment, and particularly not to treat a name; but yet I have given in nearly every case quinine and whisky, carefully avoiding large doses (which I regard as michievous), and do not think that I have erred. But it is not safe to credit any course of treatment with curing the patient when ninety per cent. of the cases recover with or without treatment, and in spite of treatment.

W. J. CHENOWETH, M. D.

DECATUR, Ill.

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1. Constitutional treatment alone will cure nearly all cases. I abstain from all local treatment as much as possible.

2. Have been in practice 15 years; have lost two cases of diphtheritic croup; have had an extensive practice the past 11 years, and have had my share of clinical experience with this disease.

3. I do not think it contagious as the common term implies, as used by people generally.

4. I have never had any experience that would lead me to believe it contagious until last fall: A family in Nebraska were sick with this disease. The mother died, and the children and father came to Galesburg to the mother's parents. The children had the disease, also the whole family residing here. I found the surrounding circumstances such that I believe the Gadelio family would have had the disease, and in fact, a short time after a neighboring family were sick with it. An examination of the well-water of the Gadelio family and McCoy family —next neighbor—found it polluted and unfit for use. My experience is that impure drinking water has almost universally been found in the wells of families sick with this disease in a malignant form. I believe the Gadelio family having diphtheria immediately after being visited by the daughter's family from Nebraska, a coincidence. I believe they would have had the disease just the same had they not been visited and exposed by the children from Nebraska. All the facts attending this particular case will bear me out in this statement. The worst case I ever had, malignant croupous form, a child of my sister who died, was sick and cared for immediately near and among other children; two of these children were younger and very susceptible, but did not have the disease. This case was one of thirty-six, and the only one I lost—that is, during the space of three months, I attended thirty-six cases, which I designated as diphtheria.

6. I always clean the tongue and get the urine in normal condition. Use tonics or not, as indicated in each individual case.

7. I have no choice. The past year I used "Listerine" diluted with water, turpentine diluted with water or in water, chlorate of potash, etc. I never use any stimulating or irritating gargles, unless in the latter stage of the disease and when the deposit is entirely removed.

8. Calomel, bicarb. potash, acetate potash, in solution and in large doses; stimulants and tonics, as indicated. I believe calomel a specific, and shall not expect to lose any cases in my regular families when I am called in time.

HERBERT JUDD, M. D.

GALESBURG, ILL.

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1. My opinion is fixed, that it is of constitutiona. origin. The trouble in the throat is only a local manifestation of the grand constitutional disease.

2. The constitutional symptoms present before the appearance of the membrane in the throat. The general bad feeling, the aching of the back and bones and that indescribable sense of misery that none know anything about except those who have had the disease, and all this before the throat is even sore. One who has had it knows that it is not of purely local origin.

3. Not strictly contagious; it is infectious, like, for instance, the miasmatic infection, extremely active at times, quiescent at others.

4. The immunity of large numbers exposed, *i. e.*, physicians, nurses, attendants, etc. The occurrence of sporadic cases. An inflammatory variety of it.

7. In adults gargles of carbolic acid, chloral hydrate, chloride of sodium, vinegar, etc. Ice externally to throat and sometimes blistering with croton oil, or kerosene. In children blow sulphur and powdered iodoform into the throat. No gargles or swabs for them. Swabbing is simply barbarous! These two articles use in adult cases too. The iodoform I have used in only a dozen cases; it does finely. Pulverized cubebs may be used with the sulphur.

8. *Elimination!* This is the watchword for the "country doctor," at least. And here let me remark that no person can transfer successfully the practice of a city hospital to private practice, especially in this disease. Eliminate! Have ever in mind that grand distinction between oppression, depression, and exhaustion, unload when you start up the long steep hill, when half way up, weary, depressed and discouraged, whip up a little, when at the top, exhausted but not dead, rest, nourish, stimulate. Large numbers of little patients taken with diphtheria, are in full health loaded with hydro-carbons and their products. Do not, I pray you, add to their load. Sweep clean the great sewer of their organisms, with anything that will do the job. My favorite is calomel, in one good round dose. Then reduce the fever by often repeated small doses every half hour. Aconite and belladonna, the German or specific tincture, in water. Have a nurse sit right there by the patient to give it. Only let up five hours during the night. When the membrane appears add to this, small doses of Gray powder (hyd. cum creta), given rapidly as the other. Give all your remedies often; saturate the system with whatever you use, quickly. This is a disease of moments, not of hours and days; nothing seems more trival than to see a medical man order some chlorate of potash (or something of that sort) for a child sick with diphtheria, to be taken once in three or four hours; many a one has died before the second dose. "Too slow," old death whispers.

Keep all the sewers flushed; use no caustics or swabs in the throat; give no opium; rely upon no local specifics; don't peel off the membrane with instruments; let it alone until loose; be very careful that when your case is convalescent it be not exposed to a draft. Should it be thus exposed it will have croup, and in the large majority that means

death. Don't be afraid that your patients with the disease will starve to death. The stuffing process is a calamity of hundreds of these cases. I draw upon my personal experience in answering these questions.

I recognize the fact that hundreds of failures in treating this disease are brought about by the attempts of the practitioner to transfer the methods of some hospitals physician to his own patients. He accepts the theories and treatment of some foreign gentleman who, perhaps, has never seen a case of the disease in question, except it be in the person of some poor half-starved offspring of misery and sin.

R. L. MOORE, M. D.

SPRING VALLEY, Minn.

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1. I think an astringent local application is a comfort to the patient. I do not think there is any specific constitutional treatment.

2. Mild cases get well under little or no treatment. Severe cases are not apparently affected by any treatment.

3. I believe it to be an epidemic disease, to which all are exposed, hence we need not suppose that there is contagion.

4. Persons who have not been exposed to contact with the sick have the disease. One person only of a family may have it. Physicians and nurses are not especially subject to it.

7. I use tincture of iron, two or three drops to a dram of water, to be swallowed every two or three hours. I direct a gargle of water, three or four parts, and vinegar, one part; warm; to be used frequently by those who are old enough to use it.

8. In addition to the above, I administer an anodyne occasionally and direct food and stimulants to be regularly, frequently and constantly administered. I have seen the windpipe opened four times, but in neither case did the patient recover

H. F. MONTGOMERY, M. D.

ROCHESTER, N. Y.

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1. An exclusively local treatment I consider too uncertain and unreliable. In a certain number of cases seen at inception of the disease, when the local manifestations are the first symptoms, or in very mild cases, local treatment may be sufficient. Some forms of local treatment are not only insufficient, but positively harmful, as swabbing and applying caustics. Constitutional treatment I regard as the safe, reliable and sufficient mode of treatment. But the constitutional remedies in general use have probably a local disinfecting and healing influence upon the affected parts, so far as they come in contact in the act of swallowing.

2. Experience and observation of results of exclusively local treatment, twenty years ago, compared with the results of a change to constitutional treatment pursued since that time.

3. I regard it as decidedly a contagious disease, but not so generally infecting those exposed to it as measles or scarlet fever.

4. Numerous examples of those by a single exposure to the disease contracting it in virulent form. I could cite a very great number of such cases, not alone of children, but of adults.

6. When treating a case of diphtheria in a household, I invariably direct the other inmates to take several times a day of the usual preparation of tinct. ferri chloridi and potass. chlor., according to their respective ages. As a prophylactic and preventative the results are often most satisfactory, especially when called in early.

7. I never rely upon an exclusively local treatment now, but from former experience, and from the experience of more recent years of continued local and constitutional treatment, would place more reliance upon frequent gargles or applications of a strong solution of tannin than on any other application, and next to this, of a solution of tinct. ferri chloridi, with potass. chlor., as a wash.

8. In the ordinary average cases of the disease, when the exudate has not invaded the larnyx and trachea, my general reliance has been, with success, upon large doses of quinine and tannin in combination, continued not only until the temperature is normal, but until the exudate has entirely disappeared. This is sometimes alternated at sufficient intervals with the chloride of iron, and if indications require, a liberal allowance of spirits in some form. At the same time frequent local applications of a solution of tannin, of iron, or of some other astringent and disinfectant. Of course, complications, irregular manifestations and sequela demand alterations and changes to meet the indications.

E. P. CHRISTIAN, M. D.

WYANDOTTE, Mich.

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1. From my observation I am led to believe it is constitutional in its origin, although in exceptional cases the first indication of the disease was the appearance of the false membrane, or "patches," on the tonsils.

2. The larger proportion of them, however, were preceded by a period of invasion, varying from a few hours to two or three days, accompanied by a feeling of lassitude, chilliness and fever, and generally nausea. During the fall of 1877 I visited, in my own practice and in consultation with other practitioners, from five to ten cases daily, whole families being stricken with it, and in the most severe form, or rather combination of forms—the catarrhal and croupous. I was certain that for a period of over a month the poison was in my own system, from the fact that I would be riding along in the cool autumnal breeze, when, without a moment's warning, hot flashes would pass over me with increasing rapidity and intensity, until I would be burning up with fever. Repeated examinations of my throat were made with negative results, as far as an exudate was concerned, although the mucous membrane would be highly congested, and some soreness of the throat. On those occasions I would stop, take a dose of quinine—5 to 10 grs.—wash it down with a large swallow of "bourbon," and in an hour or two the fever would subside. There was no regularity of these symptoms, or more properly, no regularity of their occurrence. These facts were also noted by adults in families where several were sick, houses small, and ventilation poor; but by taking quinine they would disappear.

3. I hold the disease to be contagious.

4. In February, 1878, I had a very severe case in the village, a bright little girl, whom I was very anxious to save, and over which I spent a great portion of my spare time, as she was somewhat rebellious about taking her medicine. Not being in very good health, and omitting my usual precaution of taking

quinine, I contracted the disease myself. Constitutional symptoms first appeared, and on the third day a small patch on the left tonsil. Here let me say that I nearly always found the left tonsil to be involved first. That I contracted the disease from this little one I have no doubt, as I was then attending no other case.

Another case: A young lady was taken with the disease, and made a good recovery. Two weeks after a cousin came on a visit, stayed all night, sleeping with the one who had had diphtheria and in the same room. She came from a district where there had not been any diphtheria, and returned in a day or so. In due time she was taken with diphtheria.

This case (cousin No. 1) was under the care of R. G. Floyd, M. D., now of Boulder, Col., a firm believer in the contagiousness of diphtheria, and who predicted to me the course case No. 2 would and did take.

In April, 1880, I was called to see a case six miles from town. It presented the following history: About a week before, its parents with one other child —a babe—left a sparsely settled community, traveled about 30 miles, stayed all night at a house where there was a case of diphtheria. The next morning they journeyed on to where I found them, some 20 miles further. There had not been any diphtheria where they came from, nor any in the neighborhood in which I found them, and had not been for three or four months. It seems to me the child must have received the poison at the house they stopped at over night. There were four or five children at the house in which I found them, all of whom were attacked, case No. 1, and one other, proving fatal.

5. I have never had an opportunity of making any microscopical examinations of diphtheritic membrane, but in these cases I base the accuracy of my diagnosis on the fact of its being a wide-spread epidemic, very severe in its nature and on the sequelæ.

6. In the way of prophylaxis I have found nothing equal to quinine. In families where this was given regularly to children—gr. ij to dose—I found a marked effect for good. I think, however, quinine acted more as a modifier than as a prophylactic. It did not afford immunity from a sufficient number of cases to justify its being classed as a prophylactic, but when the disease did occur, it was invariably in a milder form, and I recall no instance in which it proved fatal. I cannot but urge the advisability of its being given in continuous doses to children when there occur a number of cases in a small area, for so formidable a disease must not be allowed any vantage ground.

7. Locally, would apply counter-irritation if there was much glandular disturbance. A local application of acid carbol., liq. ferri sub. sulphatis and glycerin, as taught by J. L. Smith, made every two to four hours, gave good results. If there was extreme fetor of breath, chlorinated water, eucalyptus globulus, or chloral hydrate in solution was used as a wash or gargle. The eucalypt. glob. I found to be a very efficient agent in destroying the foul odor. In cases of great dyspnœa relief was afforded by the inhalation of steam from lime water. One little fellow, æt. 7 years, who suffered from birth with enlargement of the tonsils, was troubled exceedingly with dyspnœa, inhaled steam once an hour for 72 hours. Each inhalation would last about five minutes, when the little sufferer would often drop asleep and remain so for an hour, when he would again motion for the atomizer. He eventually made a good recovery.

8. I found quinine and alcohol to yield the best resuls in way of constitutional treatment, giving to a child of 10 years grs. iv every four hours and from four to six ounces of pure whiskey per diem—the latter generally given as egg-nog.

A word in regard to the use of mur. tr. iron and chlorate of potash: I believe they do positive injury in a large per cent. of cases. The iron in the dose ordinarily given is irritating to the already irritable stomach, causing almost uncontrollable vomiting in some cases. It is always constipating, and in the doses given is not one-half taken into the system. The potash seems to destroy, to some extent at least, the red corpuscles of the blood, and to irritate the kidneys, probably by the liberation of chloric acid, as suggested by Ludwig. I have observed this: That where iron and potash have been given with a liberal hand during the course of the disease and after the membrane had disappeared, as a "tonic" or to prevent the return of the membrane, were the cases in which dangerous sequelæ occurred, notably paralysis of the muscles of deglutition and of the heart.

I believe it is the impoverished condition of the blood from the medicines used, more than to the disease itself, that these fatal terminations are due.

I. W. HOUSTON, M. D.

MARSHALL, Mich.

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1. Both local and constitutional treatment imporportant; constitutional most so.

2. Severe, even fatal, cases in which local manifestations were slight. The persistence of grave constitutional symptoms, after the disappearance of local symptoms.

3. Highly contagious. Contagium not so diffusible as in scarlatina, measles or small-pox.

4. Sporadic cases often occur without spread. Yet there can be no doubt of its inoculability and communicability by the concentrated poison of air in the room of a patient with the disease. A child died in Colorado and was brought to Kansas City for burial. The coffin was opened in the house of a relative. Two children contracted the disease. The father of deceased child was a physician, and was called to extract a needle which a child had stuck into its knee. This child contracted diphtheria and died; no other cases in the city at the time.

6. Isolation. Have used fumigations of sulphur.

7. Disinfection of diphtheritic exudation, with hyd. chloral in glycerine (20 grs. to ℥ j), also applications of sulphurous acid, diluted. Never detach membrane, unless it partially detaches itself and obstructs respiration, or excites cough, etc. Believe the forcible detachment of membrane a ruinous practice, but think it should be thoroughly disinfected and suffered to remain until spontaneously detached.

8. Alcoholic stimulants in large quantities; quinine and milk diet. Administered to a severe case, with recovery, 12 ℥ of good whisky in twenty-four hours for one week; patient nine years of age. Whisky should be given with milk or cream, being swallowed better in this way.

T. B. LESTER, M. D.

KANSAS CITY, Mo.

1. Both important. At times when the constitution is slightly affected, I confine myself principally to local treatment. At other times constitutional treatment is the all-important thing in the case.

2. On the fact that in some cases the patient is very sick and the constitution thoroughly involved even before the diphtheritic membrane has made an appearance. And at other times the trouble seems almost entirely local. And if death ensues, it is from paralysis of the throat, and gangrene, commencing directly under the diphtheritic membrane.

3. Uncomplicated diphtheria is not contagious. But diphtheria, with scarlatina, or that which ever came from a case with scarlet fever, far or near, is most decidedly contagious.

4. The first case of diphtheria I ever knew originated in this town in 1860. There had been none in Detroit at that time, and I think none in the state. And for a year it was non-contagious and peculiarly a disease of the throat. Since that time sporadic cases have originated in different parts of the township, of precisely the same character. Where there had been no exposure, one in five or six, in the same family, had it; no means taken to separate them, and no disposition to extend beyond the pharynx. It does not extend to the aural or nasal cavities. It does not go to the trachea or bronchi. It does not go through a family more generally than ague or a hard cold or influenza, and if death occurs, it is from gangrene or paralysis, commencing directly under the diphtheritic membrane, always located in the pharynx and generally on the uvula or tonsils. But diphtheria with scarlatina, or that which has ever been in connection with scarlatina, is a very different thing. It is most decidedly contagious. It follows the inflamed membrane from the pharynx in all directions.

6. Where scarlet fever has been connected with diphtheria, or in the same neighborhood, I administer tincture of iron, with chlorate of potassa, in solution, every three hours as long as the exposure remains. And if any conditions indicating the approach of diphtheria or scarlet fever, at once give calomel and ipecac in doses proportionate to the age and strength of the patient. Seclude the patient. Success generally good.

7. Pencil thoroughly with argentum nitras over and about the diphtheritic membrane, afterwards chlorate of potassa and iron; also persulph. iron.

8. Depends very much upon the case. I have lately used calomel and ipecac with good effects. In some cases used Norwood's fl. ext. veratrum viride with the best of success. At other times from the beginning found tonics and stimulants necessary; and at still other times found no beneficial effects from any treatment.

E. S. Snow, M. D.

Dearborn, Mich.

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1. Local treatment is palliative, but is secondary to the constitutional treatment.

2. The local disease is seldom ever in accordance with the constitutional severity. If the local trouble were the cause of the constitutional symptoms, then the severe cases must follow severe local disease, which is not the case with the cases I have treated.

3. I believe it has a contagious power.

4. Where children pass in and out of houses where the disease exists they are far more likely to contract it than other children in the same locality.

6. The use of quinine, ferri citras and wine in combination have certainly been of service in preventing the development of the disease. In one family where one case was severe I had all the younger members use this prescription, but one boy who would not take "the bitter stuff." All escaped the disease but him, and he had it severely. This may have been a coincidence, but several similar cases have occurred.

7. The best thing I have ever found is tr. ferri chlor. in full strength, applied once or twice daily to any patches of exudation. It destroys the membrane and relieves the sensitive condition of the parts at once.

8. Stimulants from the first to the last and the use of muriated tr. of iron are the most valuable of all the remedies I have used or seen used, unless it be quinine, which I generally give in combination. My success has been much better since adopting the use of stimulants than before.

Wm. H. DeCamp, M. D.

Grand Rapids, Mich.

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1. I believe in both.

2. I have recently had several cases to treat and have not lost any patients this winter.

3. I believe it is, emphatically.

4. I had last winter, five children taken with it (in one family), one after another, they having contracted it from a neighboring family; and this is only one case in hundreds.

6. I have given the tinct. muriate of iron and quinine as a prophylactic, in some families with success, have also burnt crude petroleum on a shovel.

7. Rectified oil of turpentine, applied directly to the membrane or exudation, two or three times a day.

8. I give an emulsion of turpentine every three hours, and sulph. quinine and salicylate of soda equal parts, with whisky and milk occasionally.

A. J. Ward, M. D.

Madison, Wis.

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1. That it is amenable to a great extent in early stages to treatment mainly constitutional.

2. For several years I have relied chiefly on chlorate of potash, administered internally, when it may also act topically, and have found that when treatment is begun at the earliest manifestations of the disease that bad results scarcely ever follow, and that, at times when there is present among cases otherwise treated in our city, a very considerable fatality.

3. So far as I have observed it is more epidemic than contagious.

4. When it first made its appearance in our city in 1860 it was very prevalent and very fatal. It then affected several members of the families it invaded with a mortality of about 25 per cent. and seemed to spread more by contagion than it has done since. Subsequently it usually affects but a single member of a family and without obvious exposure to previous cases.

7. I formerly used the various topical applications in vogue; but having but poor success and believing that the pain, agitation and terror to the sufferers counteracted largely their good effect, if any,

gradually omitted them and for the last three or four years have relied almost wholly on such local effect as attended the swallowing of the solution prescribed.

8. Potassic chlorate solution, with minor adjuvants as the cases seemed to demand. Oftener nothing else was given.

ASA HORR, M. D.

DUBUQUE, Iowa.

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1. Diphtheria is benefited by both local and general treatment.

2. I have no experience with the progress of diphtheria without treatment, but as the average of cases seem to do better on one plan of treatment, than another, I reason that judicious treatment exerts a salutary influence on the progress and termination of the disease.

3. I suppose diphtheria to be contagious, and this conclusion seems to be strongly supported by cases reported of surgeons who have contracted it from receiving the diphtheritic deposit into the mouth, while performing tracheotomy on patients suffering from it. I also think that it is infectious to a slight degree, but my observations have not been such as to render this question demonstrably clear to me. When a number of cases occur in the same family, it is not easy to determine whether the new cases come from those first sick, or from common atmospheric surroundings.

6. Isolation and ventilation, which I esteem as the most effectual prophylactic reliance against all contagious and infectious diseases, except small-pox.

7. With patients old enough to apply it, I prefer warm water, used as a frequent and thorough gargle, above any other local application. Chlorate of potassium in compressed tablets held in the mouth so as to dissolve slowly is a good local application. I avoid violence to the throat and do not like harsh local applications.

8. Quinine in rather small doses, muriated tincture of iron in pretty full doses, a liberal diet, stimulants when demanded, and good air and surroundings.

E. INGALS, M. D.

CHICAGO, Ill.

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1. I believe that both local and constitutional treatment are required.

2. The fact that many cases commence with feelings of depression, debility, headache and fever before any throat symptoms are manifest, and the appearance of the membrane on abraded surfaces, as that produced by a cut or blister, as also on the mucous membrane of the body as well as the sequela of paralysis, etc., leads me to believe it to be a constitutional as well as local difficulty, and hence the treatment.

3. I have never known the disease to be carried from one place to another by a person unaffected and yet I believe it to be contagious by immediate contact and eminently infectious at all times.

4. Lately I attended a family in which were three deaths. They were nursed by an aunt who had a large family of children. She often went home to look after their interests, but none of them contracted the disease. Four weeks after the last child died, and the house was cleaned, the aunt and two of her children visited the house, and a week after both of these children had diphtheria. When it was known, two of her children were sent from home; they came back at the end of three weeks and contracted the disease.

6. I have experimented a little with the sulphites, carbolic acid and salicylates of soda, but never thought they were of much benefit.

7. Equal parts of sulphur and bicarbonate soda applied to the membrane dry.

8. Large doses of alcoholic stimulants, say from a pint to a pint and a half of whiskey a day to an adult, with a solution of chlorate potas., iron and carbolic acid. Sometimes in prolonged cases Fowler's solution and abundance of milk.

J. W. CRAIG, M. D.

CHURCHVILLE, N. Y.

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1. I consider it both a local and constitutional disease, and requires both local and constitutional remedies.

2. From general observation; cannot particularize.

3. I have no doubt that it is.

4. Cannot cite particular cases, as I kept no notice or record of cases.

6. Use the same remedies that I do for its treatment, only in smaller doses, and at greater intervals.

7. I have relied chiefly upon the chlorine iron mixture.

8. Quinine and the heroic use of stimulants (whisky).

JOHN B. WHITE, M. D.

SAGINAW CITY, Mich.

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1. I consider that both local and constitutional treatment are important.

2. My own observations have been on much too limited a scale to constitute of themselves a basis for a satisfactory induction. My opinion is, therefore, based more upon facts reported by others, with which my own limited experience agrees. I refer especially to the priority of the local manifestations and the occasional cure of the local lesion without development of septicæmia. On the other hand, I have seen cases which presented conclusive evidence of septic infection, and in some of these cases a fatal termination after complete disappearance of local lesion.

3. I believe it to be contagious.

4. None which of themselves would be conclusive. My opinion on this point is based upon facts recorded in the medical literature of the subject.

6. I have not had occasion to adopt any except the general measures to insure cleanliness and ventilation, and the prompt disinfection of all articles which have been used by patients and which others may have to handle. I have sometimes, while attending a patient, taken a dose of sulphurous acid immediately before and after the visit. In examining a patient's throat I take care, as far as practicable, to avoid receiving his expired air.

7. I have usually given preference to the muriated tincture of iron.

8. The alcoholic. I beg you to observe that my experience with cases of diphtheria has been only limited, but nevertheless I cannot resist the conclusion that the use of alcoholic stimulants, pushed to the very verge of intoxication, has been the direct cause of the recovery of a few very bad cases under my care.

JAMES L. CABELL, M. D.

UNIVERSITY OF VIRGINIA.

1. They are both useful.

2. The fact that except in very mild cases neither local nor constitutional treatment seems to avail to do good alone.

3. Think it communicable, but not necessarily so.

4. Baby in one family had it six or eight days; then two other members of same family had it and no other source of contagion known. Child in one family had it; others in same family associating with case did not have it.

6. Isolation is not a success. Can't keep up the quarantine.

7. Alum gargle. Sulphur and soda insufflated.

8. Quinine, tincture of iron, brandy.

JUDSON BRADLEY, M. D.

DETROIT, Mich.

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1. As I am not in general practice I have seen only a few cases of diphtheria, and in consultation only.

2. All treatment frequently fails of any effect, and when many cases of recovery are reported as the result of any treatment I have doubts as to the diagnosis, as some persons are liable to confound tonsillitis with diphtheria. I have seen cases that experienced physicians pronounced diphtheria, which I doubted, and their recovery rather confirmed my opinion.

3. No doubt about its contagion.

4. Too many to relate. Several in this city and have been reported.

5. I examined the membrane years ago in Massachusetts and found the difference between the membrane of diphtheria and croup to differ in that the former never organized, and never had any tendency to organize.

7. We have thought preparations of iron had some effect for good sometimes. Moist atmosphere.

8. Tonics and stimulants.

C. K. BARTLETT, M. D.

ST. PETER, MINN., Hospital for Insane.

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1. Place the greatest value upon constitutional treatment, but consider both important.

2. The treatment of a large number of cases. As my clinical observations increased in number the benefits of a vigorous constitutional treatment seemed more and more apparent in all forms of diphtheria. Local treatment is indispensable when the nares are the seat of false membrane, and is valuable in all cases where local manifestations of diphtheria inflammation can be reached.

3. Certainly inoculable by material from diphtheria sore received upon mucous or raw surface; may also be communicable through parasites, food, drinks, perhaps by miasm.

6. Isolation of patient, destruction by burning or instant disinfection of all textile material soiled with products from the sick. Instant disinfection of all utensils in the sick room, more especially spoons, drinking cups, plates, etc.

7. Tinct. iron mur. with glycerine; Monsell's iron with glycerine and tinct. iodine; sol. chlorinated soda diluted; Watson's chlorin. mixture; mur. acid with honey; finally, spray of lime water and vapor bath to facilitate softening and detachment of false membrane. Ice to throat internally. Warm poultices externally when suppuration is probable.

8. Tinct. chlor. iron, sulph. quinine and chlorate potash; alcoholic stimulants, forced diet of concentrated meat essences, milk and milk punches; frozen cream and frozen broths. No purges unless called for by state of bowels at beginning of treatment. The two greatest indications to be met are, first, to prevent death by closure of the larynx; next by septicæmia.

S. M. BEMISS, M. D.

NEW ORLEANS, La.

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1. Have no doubt that it is both local and constitutional, and requires both forms of treatment.

2. On a number of cases of diphtheria of the conjunctiva that I have seen when there has been no constitutional symptoms present. In throat cases I have seen cases without any constitutional disturbance, this coming on secondarily.

3. Think it is contagious.

7. Have found powdered iodoform to be the most efficacious in my hands.

8. General tonic course.

X. C. SCOTT, M. D.

CLEVELAND, O.

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1. I think local treatment demanded, but not to be relied on to the exclusion of constitutional measures. You have blood poisoning, and must treat accordingly.

2. On thirty years' clinical experience. I have usually observed the constitutional symptoms follow soon on the local. Believing as I do in the specific origin of disease, I regard this: 1st, local; 2d, constitutional.

3. I feel certain that in a severe form it can be propagated to a certain extent.

4. I have known a single case to give rise to many others in a previously healthy locality.

5. None. I do not believe bacteria to be the cause, but the effect, as seen so often in other morbid conditions.

6. Isolation; the use of disinfectants.

7. I have found nothing equal to Monsel's salt, or a solution perchloride iron, undiluted, applied to parts with a camel's hair pencil every three to six hours.

8. First, constant care to prevent patient from swallowing secretions; washing throat with sol. chlor. potass., or common salt upon food or drink. Next, quinine and muriate tinct. iron in good full doses. I have been often pleased with the use of atomizer to parts, employing aqua calcis, or a solution of carbolic acid; good food, and alcohol if indicated by feeble circulation.

When the disease involves the larynx, a warm room, the air saturated with vapor of water. I have known a few recoveries in this croupal form of the disease, but I feel usually that the prognosis is unfavorable.

R. N. TODD, M. D.

INDIANAPOLIS, Ind.

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1. Think both local and constitutional treatment are required.

3. Think it is contagious to slight degree, but not infectious.

4. Have never known any to contract the disease from a patient except those who had the immediate care of the patient.

6. None except general ones, such as to see that there was no defect of sewerage, and that the water supply was pure, and good ventilation, etc.

7. That class of remedies known as disinfectants

or rather germicides, but especially bichlor. of mercury, sulphurous acid, carbolic acid and hydrochloric acid, potass. chlor., etc.

8. Iron, quinine, digitalis and stimulants. In the last five or six cases I have had I have used jaborandi with very good results.

W. N. SMART, M. D.

GRAND HAVEN, Mich.

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1. I hold it to be of constitutional origin, and requiring constitutional treatment.

2. The constitutional symptoms manifest themselves many times some days before the local. In many cases the local difficulty is trifling, while the constitutional is very serious.

3. Rather endemic than contagious.

4. I have often known children residing in the country to have the disease, who had not been exposed to it, and where there were no other cases in the vicinity. I consider diphtheria and scarlet fever the same disease, only more malignant in some cases than others.

6. No more than in other diseases.

7. Bromine, pot. chlorate, and tinct. iron. I never swab the throat, but let the patient swallow the medicine. Use no spray; depend on the general treatment to remove the false membrane; do not bundle up the neck much, but apply mustard sometimes.

8. Dover's powders and mercurial chalk until the fever subsides and the tongue cleans off. Give wine and quinine or cinchonidia. from the commencement of the treatment to the close. Milk and beef tea the main diet.

L. B. PARKER, M. D.

MARINE CITY, Mich.

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1. I am quite in favor of the constitutional treatment as the more necessary, but apply active treatment to the local disease also.

2. I judge from the fact that in some cases the constitutional symptoms, such as depression, exhaustion, and swelling of glands away from the throat, and the rapid anæmia and deterioration of the blood, that general remedies are needed. The local treatment is more for the purpose of disinfecting the exudate than for any other reason, unless it may be the comfort of the patient.

3. Strongly believe in its contagiousness.

4. From reports of cases to the State Board of Health and the liability of other cases to occur when the disease is present in persons predisposed by youth, and by contact with the case or under the same roof, by one case following another after an interval of a few days, from cases arising after exposure, to the atmosphere, etc., of houses a short time after a case of diphtheria had occurred.

6. Separation at once of the well from the sick, and, if possible, a removal of the well from the house. In some instances, where the patient was up stairs the other children remained down stairs, excellent success has attended it. I have used iron and quinine as prophylactic treatment.

7. The subsulph. ferri sol. in glycerine, about one part to three; lime water spray, carbolized, ʒ ss acid carbolic liquid to ℥ vj aq. calcis.

℞ Aq. chlorini, ℥ ss
Syrupi, ʒ ss
Aquæ, ʒ vj.

M. Ft. Gargle.

℞ Iodoformi, ʒ j
Sodæ bicarb., ʒ ss.

M. Use in insufflator. Hot poultices to neck.

8. Tinctura ferri mur., quiniæ sulph., alcoholic stimulants, milk and broth.

HENRY F. LYSTER, M. D.

DETROIT, Mich.

From experience in the large epidemics in England in 1858-9 and 1863, and more scattered cases since in this Dominion:

1. Of specific origin, neither local nor constitutional, although aggravated by certain conditions of constitution, and favored by local miasma.

3. Probably not contagious, but undoubtedly very infectious, whether from bacilli, fomites or specific purulent matter floating in the air, I know not.

4. I have never seen a case of true characteristic diphtheria confined to a single person.

In 1863, when residing at H——, two nieces were brought to my house, nine miles off, apparently well, the third niece at B—— having suspected diphtheria. In a few days this child died of malignant form of diphtheria. The two nieces were examined and whitish patches seen on throat, but they never ailed. A few days after, my sister, æt. 18, took diphtheria of a very malignant type and died in nine days. A doctor who visited her, together with his wife and their servants, all took it; my servant also, and my mother and brother, who came to see my sister from place 100 miles off, and one of whom stayed but two days in the house. I was in constant attendance on my sister, and was the only one in contact with her who escaped the disease, either owing to much smoking, or, more probably, because I had a severe malignant sore throat (followed by partial general paralysis lasting three months) when at the hospital in 1854, and which was, I think, diphtheria, though not then recognized as such, for the disease was almost unknown in England.

6. Isolation and disinfectants have restricted the disease somewhat, I imagine, within due limits, but without strict legal means of enforcement, this is difficult to carry out in private practice.

7. At an early stage, sulphurous acid, with a spray-producer, or swabbing the throat with weak solution of perchloride of iron is efficacious, but after the membrane is fully formed, it is difficult to act on the tissues of the throat with much effect. To tear away the membrane or use strong caustics, is bad treatment and only aggravates the evil. I incline to use pilocarpin, but have had no personal experience with it as yet.

8. I have met with best success in giving large frequent doses of perchloride of iron, in tincture or solution, and trust chiefly to it. Have no faith in quinine or other drugs. I give ice freely; plenty of nourishment, and stimulants freely and early. In general I add potass. chlor. to the iron. I think the burning of sulphur in the room also assists.

Half the cases reported diphtheria in this country are, in my opinion, mistaken for such by young men who have had little opportunity of seeing cases of real diphtheria.

B. M. WALTON, M. D., M. R. C. S., Eng.; L. M., L. K. Q. C. P., Ire.; L. C. P. S., Ont., Quebec and Manitoba, etc.

PEMBROKE, Ontario.

Menthol in Infusorial Catarrh, Germ Diseases, Piles, Etc.

By Ephraim Cutter, M. D., New York.

THIS Japanese contribution to pharmacy is remarkable, and seems destined to a very useful and popular career as a drug in our own country. According to Mr. S. K. Takahashi, the Japanese consul at New York, the Japanese name of menthol is "hatsca," and has been used at least 2,000 years. It is the Japanese peppermint, the camphor or peppermint oil or stearoptene, homologous with thymol. It is derived by distillation from the mentha genus of plants, in which are found peppermint, spearmint, cornmint, but the exact species that furnishes menthol does not appear.

Menthol is a camphor, not an oil at ordinary temperatures. It comes in crystals that under a low power appear like logs of wood, lying side by side, wholly in contact or partially so like some diatoms, (see figs. 1 and 2). It polarizes light beautifully. From its alcoholic solution it crystallizes in filaments which dispose themselves in curious graceful curves, (see fig 3.)

One inch objective.

Fig. 1. Group of Menthol Crystals.

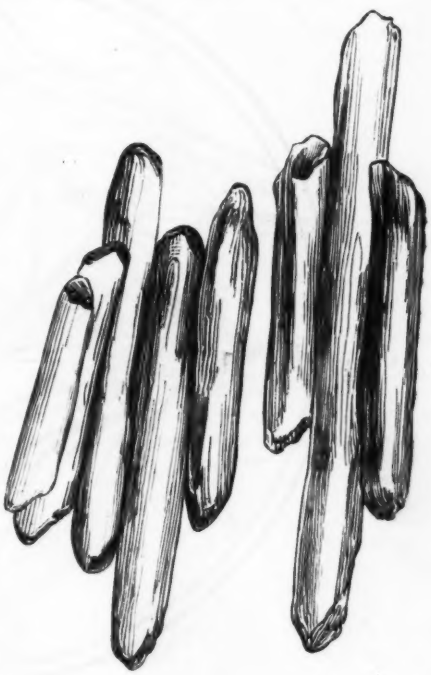
Fig. 4 shows crystalline bodies from the alcoholic solution of menthol slowly evaporated at ordinary temperatures. The weird actinophrys-like bodies A and B are peculiar. The central parts were orange, the peripheral parts and rays were blue under polarized light. Note also the marked arrest of some of the crystals C by another crystal. The continuation in the line of complete arrest is interesting.

Menthol is somewhat soluble in water, as shown by its taste being imparted to water, and by the slug-like movements of the crystals when covered with water and placed under the microscope. Sometimes the movements in the water towards and from the dissolving crystals are as rapid as those formed by an active rotifer or vorticell. These movements are rendered visible by minute objects floating in the water, as infusoria and algæ. They approach the crystals of menthol with velocity, and are ejected with violent electric motion.

Menthol left exposed will evaporate and disappear at ordinary temperatures of living rooms. Its smell is like peppermint, but less pungent. Taste is somewhat sharp and penetrates the whole mouth. It looks like the sulphate of magnesia to the naked eye but more talc like. It is rather bulky, one ounce filling a two fluidounce bottle. From what I can judge it is a very agreeable medicine, and would make an acceptable substitute for the smelling salts of elderly ladies. There is nothing unclean about it. Its volatility renders it easy to administer in diseases of the air passages, even to infants and very feeble persons.

Its action is parasiticide, though not energetic in its action on the living tissues of the human body.

Dr. Salisbury, of New York, first called my attention to menthol as the remedy par excellence for infusorial catarrh. This opinion is based on a two



½ inch objective.

Fig. 2. Group of Menthol Crystals.

years' extensive experience. Since my own experience is confirmative, I feel that our combined testimony should be more widely known, hence this paper.

What is "Infusorial Catarrh?" During the past winter, epidemic influenza has prevailed, and when combined with pneumonia, the latter disease is very intractable. Whole families, neighborhoods, and cities have been down with colds, sometimes with no perceptible cause, unless some contagion can explain.

Dr. Salisbury has discovered in the excretions of the air passages, of persons suffering from this epidemic influenza, and myself with others have confirmed the presence of, a flagellate Infusorium with body and legs, that he calls the "Asthmatos Ciliaris." Accounts have been published of this infusorial parasite

by Dr. Salisbury: 1. In Haller's Zeitschrift, January 1873, page 7. 2. By the writer in Virginia Medical Monthly, November 1878. 3. By the writer in Virginia Medical Monthly, April 1879. 4. By the writer in Boston Journal of Chemistry, November 1878. 5. By the writer in American Journal of Microscopy, (Phin's), March 1881. 6. W. Saville Kent's Infusoria.

The writer is well aware that men like Woodward and Leidy, consider these to be nothing but deformed ciliated epithelia of the bronchial mucous membrane. These gentlemen, though not practitioners, are entitled to respect, but if the medical profession requires an unanimous opinion from critics about the various subjects they encounter in professional life, that the forms were ciliated epithelia, to that of infusoria.

A cut in the American Journal of Microscopy, New York, March 1881, John Phin, editor, gives a fine view of several specimens drawn from life, of the asthmatos ciliaris, and the reader is referred to said journal for full explanations.

Fig. 5. Is a drawing from life of Asthmatos Ciliaris from the nasal excretions of the artist, Feb 9th, 1883.

The epidemic character of this infusorial catarrh is well marked.

The Asthmatos is probably carried in the air from nose to nose, since Dr. George B. Harriman, of Bos-

Fig. 3. Crystals of Menthol from Alcoholic Solution. The long needles arranged in graceful curves reminding one of Hogarth's lines of beauty.

before they act in behalf of their clients, they would rarely write a prescription or take a fee. The evidence above given comes from practical experiences in over a thousand cases and sixteen years of time; and these gentlemen have failed to explain how ciliated epithelia exist on the conjunctivæ as the Asthmatos have existed, or how the life phases of the Asthmatos are so entirely different from those of ciliated epithelia.

I would say that Dr. Elsberg of this city, after a long and careful examination, and when shown a test specimen taken in his presence from the secretion of a sufferer, has signified to the writer in the presence of witnesses, his conversion from the belief ton, my associate, has found it in the air of infected districts.

Again, physicians who study the excretions in Infusorial Catarrh under the microscope, are apt to "catch it," by inhalation from specimens.

The Infusorial Catarrh occurring alone is generally a mild affair; when complicated with a ropy, sticky condition of the blood, and exposure to cold, and followed by pneumonia, it becomes very serious and is often fatal.

The Infusorial Catarrh complication explains the sometimes supposed contagiousness of pneumonia. In this way the puzzling pneumonias and deaths of my personal friends, the late Dr. G. M. Beard and

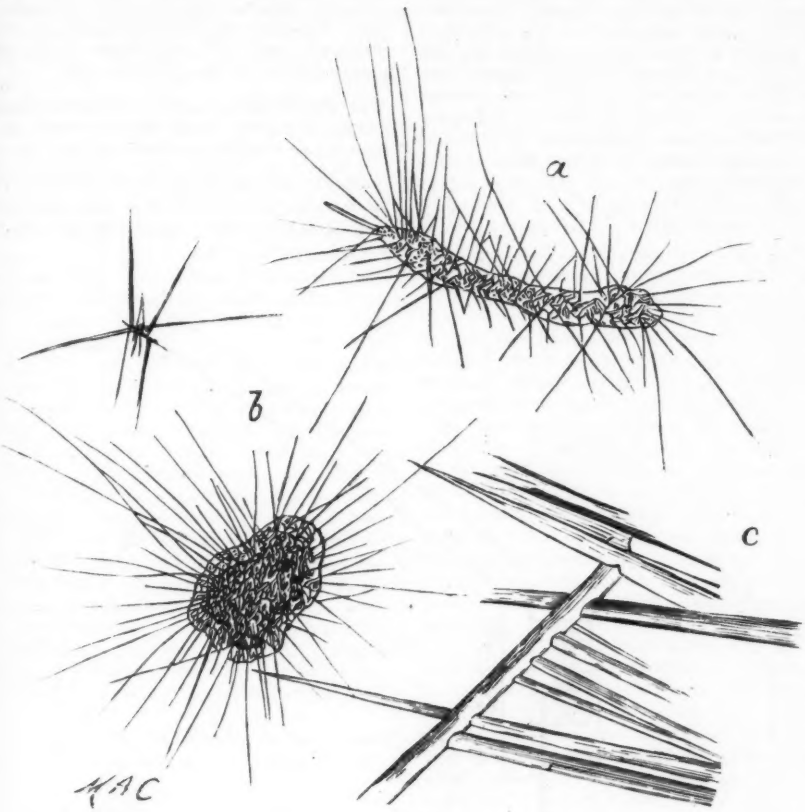


FIG. 4. Menthol Crystals. Evaporated from the tincture between the cover and the slide. a and b, 1 inch objective. c, 1-5 inch objective.

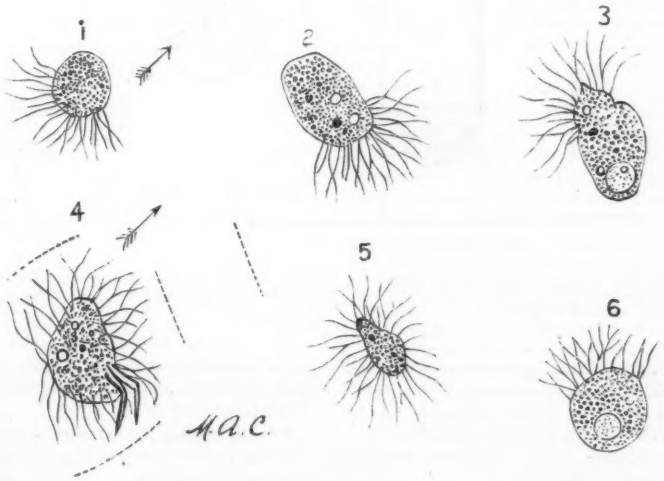


FIG. 5. Asthmatos Ciliaris taken from the nasal excretion of artist who made these drawings and was suffering from epidemic influenza. Feb. 1883.

1. A young form actively rocking in the direction of the arrow.
2 and 3. Older specimens waving their cilia, not in one directton and back as ciliated epithelia do, but crossing each other.
4 and 5. Forms deemed crucial by Elsberg with cilia on all the periphery and crossing each other unlike cilia or epithelia.

his wife are explicable to me. The rapidity and suddenness of his illness and death can be explained by the complication of these infusoria, and her case also explained by her catching the Infusorial Catarrh from him, and by her sad exposure at the funeral exercises at the grave of her husband, by which the imflammation of the lung was superadded. Now in the writer's opinion if they had under these circumstances inhaled menthol, nascent chloride of ammonium, sulphur fumes, benzoate of soda atomized, or carbolic acid, the Asthmatos and its hyperæsthetic ir-

2d. By inhaling from the bottle containing menthol. The upper lip should half cover the mouth of the bottle, and the breath drawn in through the opened half of the mouth of the bottle.

3d. By putting ten grains of menthol in a tea-pot, adding a cup of warm water, closing the cover loosely, and inhaling through the nose of the tea-pot.

4th. By the use of the inhaler shown in the cut, fig. 6. Water used cold or hot. One advantage of 3 and 4 is that the menthol will keep good in this way

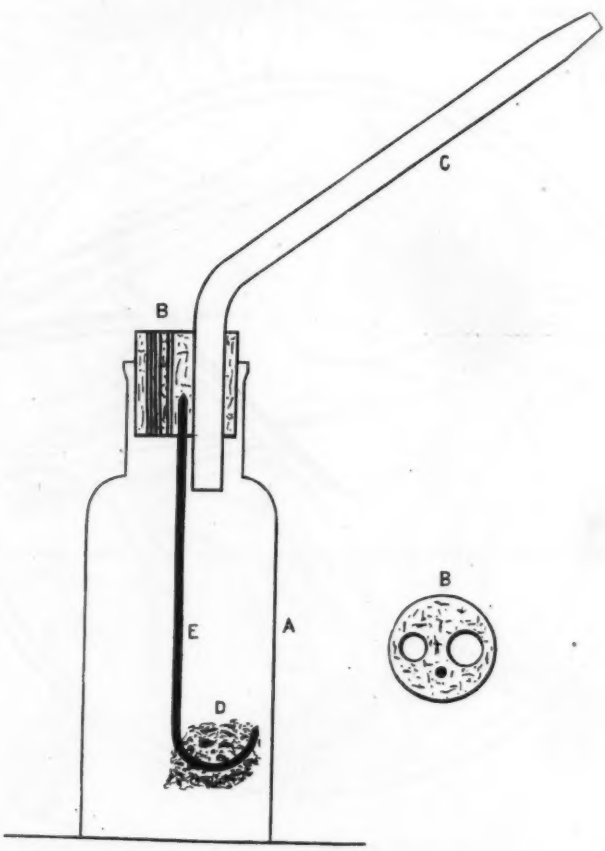


FIG. 6. The Cutter Nascent Chloride of Ammonium Inhaler used for the inhalation of Menthol. The reservoir a, the biperforated cork b b, the bent glass tube c, are the essentials for menthol; while the sponge d and the hook e are needed for the nascent chloride.

ritations would have been destroyed and the patient left to contend with the pulmonal disease alone, which would have been more tractable, as the cough would have been more easily subdued.

Menthol may be used in the "infusorial catarrh:"

1st. By oral administration.

℞ Menthol ʒ i.
Fluid Ext. Licorice.
Water.
Brandy ♏ ʒ iij.
Carbolic Acid, grains xx.
Ol. Sassafras, gtt. xx.

M. Dose, four (4) drops once in two hours.

for a considerable length of time without renewal, while the water may be warmed by setting the pot or bottle in a vessel of hot water.

5th. By putting the crystals of menthol in a paper envelope, or in the folds of a napkin, and breathing over and through it.

6th. By rubbing menthol moistened with water on the upper lip or moustache.

7th. By atomization of a solution of four (4) grains of menthol to one ounce of *warm water*.

The effects of the inhalation are to give an agree-

able glow to the air passages, and immediate relief to the irritation that causes cough in the cases of Infusorial Catarrh we have employed it in. Even adults have said, "this goes to the right spot and relieves me," while the cough that was interrupting the conversation was instantly checked. For infants' use, the inhaler (4) can be used passively by simply blowing the vapor in the face of the little patient. If the trial proves disagreeable it is evident that the case is not one of infusorial catarrh, and it is not to be continued unless the microscope verifies the presence of the parasite. If menthol does as much good in the hands of other gentlemen as it has in ours in the epidemic influenza common in winter and spring months, in whose excretions the Asthmatos Ciliaris is found, the object of this communication will be attained.

In scarlet fever and diphtheria (which we regard as one and the same complaint), typhoid fever, measles, erysipelas, etc., menthol is indicated as a germicide. Dr. Salisbury relates a case of a lady lately ill with diphtheria, where the mouth and fauces were filled with patches of membrane one inch in diameter. The menthol was used in connection with his ordinary treatment of quinine, one grain once an hour, with great relief to the symptoms, and the entire disappearance of the membrane in twenty-four hours. The facility with which menthol can be administered by inhalation, and its agreeable odor, make it very desirable in such cases, particularly where swallowing is impossible. It may be given by atomization, four grains to the ounce of warm water, or by the mouth, according to the Salisbury formula above given.

3th. It may also be used outside as an ointment made by the following formulas of Salisbury:

FORMULA 1.

℞ Menthol, ʒ i.
Simple Cerate, ℥ ij.
Ol. Sweet Almonds, ʒ iss.
Pure Oxide of Zinc, ʒ j.
Carbolic Acid, ʒ ss.
M

Uses. Applied to nostrils in infusorial catarrh, hay fever, and all cases of catarrh.

FORMULA 2.

℞ Menthol, ʒ i.
Simple Cerate, ℥ ij.
Ol. Sweet Almonds, ℥ iss.
Pure Oxide of Zinc, ʒ i.
Chaulmoogra Oil, ℥ ss.
Carbolic Acid, ʒ ss.
M

Uses. For piles, eczema, pruritus of genitals. Fistulæ, rectal irritations, and for all external applications.

FORMULA 3.

℞ Menthol, grs. xv.
Carbolic Acid, ʒ j.
Fluid Ext. Licorice, ℥ ij.
Water, ℥ xiv.
M

Uses. Infusorial catarrh, diphtheria, scarlet fever. Gargle once an hour at will. This may be diluted with water.

In piles and rectal diseases ointment No. 2 has been found to be invaluable.

In spermatorrhœa it is very useful as an ointment to the genitals, to quiet the irritability, according to Salisbury. It must not be used too strong however. Of course these hints are enough for the practitioner and he can adapt the menthol to suit the varied circumstances of the cases. Messrs. Parke, Davis & Co., deserve the thanks of the profession for placing menthol in their hands, because it is a real, substantial and practically valuable addition to materia medica—an oriental boon to the occident.

Cascara Amarga and Berberis Aquifolium in Secondary and Tertiary Syphilis.

By W. H. Bentley, M. D., LL. D., Woodstock, Ky. (Lately of Valley Oak, Ky.)

AUGUST 11th, 1882, Mr. B., æt. 26 years, light florid complexion, rich auburn hair, five feet six inches tall and weighing 160 pounds, consulted me in reference to a severe case of secondary syphilis with which he had been afflicted for about twelve months. Mr. B. had been day clerk in a hotel for five years and still held the position. His home is in a large city about 140 miles distant from me.

He stated that he contracted the disease in February, 1881. That so soon as he was aware of the fact he applied to his physician, who prescribed for him 60 four-grain blue mass pills and two washes, one consisting of a solution of carbolic acid and strong soap-suds, to be used very thoroughly every morning, and the other a whisky solution of sulphate of copper with which he was to carefully moisten the chancres at intervals of three or four hours until he retired at night. That he soon became badly ptyalized, which condition was maintained for six or seven weeks, a very meagre diet being rigidly maintained throughout. That a "bubo" had formed in the right inguinal region, which soon disappeared under mercurial inunctions. That at the termination of seven or eight weeks' treatment, all the symptoms disappeared, he considered himself well, and was so pronounced by his physician. That three months after he was seized with aching bones, sleepless nights, a feeling of lassitude and inertia, sore throat with condyloma on the tongue, copper-colored spots on the face, arms and chest, which soon became "constantly oozing sores" that extended themselves all over his surface with the exception of his feet and hands. These were sore and painful by day and almost unbearably itchy at night. He was weak and tremulous, lost his appetite, his digestion was depraved, while his entire person exhaled "an unbearable stench," to use his own words.

His physician now put him through another course of treatment similar to that already described, and then a few weeks' treatment with Donovan's solution of arsenic, iodine and mercury. He did not improve, but grew rather worse. Then for nine long months he was in the hands of "newspaper doctors," the advertising scoundrels who, like a pestilence, through newspaper aid, infest every city. He grew gradually worse when some one directed him to me.

As he was exceedingly constipated at the time, I purged him with pills of podophyllin, aloes and soap, and put him on the following mixture:

℞ Fl. ext. cascara amarga (Honduras bark),
Fl. ext. berberis aquifolium, ää f ℥ viij.

M. Sig. Dose, half drachm four times a day, namely, before meals and at bed-time. At the end of each interval of ten days the doses were to be increased by half a fluidrachm. Thus, at the twenty-first day it would be an entire drachm. I also prescribed a pint (pound) more of each of the above

fluid extracts, which were to be mixed and used as the first, observing the same rules as to regular increase in size of doses.

I also directed an "eat-what-agrees-with-you" diet.

On the 28th of the ensuing September he wrote to me: "I am as well as ever. What do you advise?" I replied: "Procure another pound of each of your fluid extracts, mix and take as before, observing same rules as to diet and increase of doses." He informed me subsequently that he had complied, and I directed him to discontinue all treatment.

April 20th, 1883, being within about 20 miles of me on business, he paid me a visit, and I assure the reader that I never saw a person appear to be in better health. I feel certain, notwithstanding all that has been said and written on the incurability of such cases, that Mr. B. is thoroughly and entirely a sound man physically.

Now, it is evident, to my mind, that the almost marvelous cure in the above case was wrought by the berberis, the Honduras bark, or by their combined action. That both the above drugs are alterative, tonic and anti-syphilitic in the very highest degree, I have been long convinced, or at least from a period almost contemporaneous with their first introduction by Messrs. Parke, Davis & Co., whose fluid extracts are the only preparations of these drugs that I have used. But this combination of both is not a test of either, and I regret that I did not test one at a time.

By the way, this shot-gun prescription business is too common. It is fashionable for a writer to laud a medicine for some wonderful property, and then to show his wonderful acumen, he sets forth his prescription, containing a half dozen or more drugs in combination with his new bantling, which have been prescribed in the given disease for ages.

I recently came across an amusing case in point in some medical journal, I do not remember now which one; no difference, however. The writer wished to extol kava kava and yerba santa in gonorrhœa and cystitis. He then pedantically set forth his wondrous prescriptions so as to show us stupid readers that he used the metric system, giving, at the same time, the names of all drugs he could, in the most approved Latin, of which he seemed a great master. If I remember correctly, in a case of gonorrhœa, he gave internally a number of times each day equal parts of kava kava and yerba santa, a number of other times each day, iron and strychnia, and had the patient to use three or four times daily an injection composed of a half dozen articles, all named in Latin and weighed or measured in French. I think the writer stated that his patient "got well," or something of the kind, but let me ask "what cured him?" Injections of pure water, either cool or warm, with nothing more, occasionally cures gonorrhœa, while extensive courses of drugs, both internally and locally, often fail, and the disease seems to "just wear itself out," usually nearly wearing the patient out at the same time.

Now, in the above instance, no one can tell what cured the patient, or what part, if any at all, the kava kava and yerba santa played in this little healing drama. And this sort of prescribing is common through all our medical journals. A number of medicines are prescribed in combination, a cure results, and it is attributed to a particular medicine —nearly always some favorite of the prescriber that he wishes to introduce, or some recent introduction that he wishes to favor. Would it not be better in testing a new drug to give it alone and then to scrutinously watch results? Is there any other way to satisfactorily test its merits?

In the following cases, two in number, I acted more to my own satisfaction than in the case already related: September 3d, 1882, Mr. C., a Tennesseean, æt. 20 years, consulted me. He is remarkably tall and spare, skin quite dark, his long straight hair and his eyes intensely black. He had been afflicted by syphilis about ten months. His throat and mouth were badly ulcerated, appetite and digestion feeble, bowels much confined, nights nearly sleepless, and he was constantly afflicted with a morbid fear of impending death. Low diet, mercury and "poke-root bitters" had rendered him a living skeleton and had nearly done the "fatal work."

Prescribed one pound fluid extract cascara amarga with generous diet, in which latter good roast beef formed an important item. The mode directed for taking the medicine was as follows: Begin with 20-drop doses four times a day (a dose before each meal and one at bed-time) to be continued during 10 days. Then the doses for 10 days to be 30 drops; the ensuing 10 days 40 drops, increasing the dose 10 drops at the end of each period of 10 days, until, during the last 10 days, he had 60-drop doses. He was then to drop his medicine for 10 days, at the end of which he was to commence with 20 drops and proceed as before, and this plan was to be continued throughout the entire course.

He wrote to me at the end of the first month that he had rapidly improved from the first. I directed him to continue treatment until he had used two pounds of the medicine. From his written statements and those of his home physician, I have no doubt of his being well.

Some time in October, 1882, a Mr. J., living but a few miles from me, sent for me. I found that he had been an invalid for several years, most of the time confined to his room, and much of it to his bed. He was 33 years old, and that was the twelfth year of his syphilitic experience. Nearly all the while he had been taking some kind of medicine—for the last nine years some kind of patented nostrums. His appetite and digestion seemed good, but he had a bloated appearance, and was often temporarily paralyzed in his limbs—sometimes in one, sometimes in both legs, and occasionally in one or the other arm, but never in both at the same time. Tertiary syphilis was unmistakably marked, coupled with the worst case of syphilitic eczema I ever witnessed.

I prescribed a pint of the fluid extract berberis aquifolium, commencing dose 20 drops, and the same plan followed throughout the entire treatment as that detailed in the latter of the above cases, to wit, Mr. C.'s case. A good nutritious diet was also enjoined. He has used in all nearly three pints of the medicine, and is so much improved that he appears well. Eruption got well in a month and there has been no symptoms of paralysis since early in December. His skin looks healthy, fresh and tender, and he goes when and where he chooses.

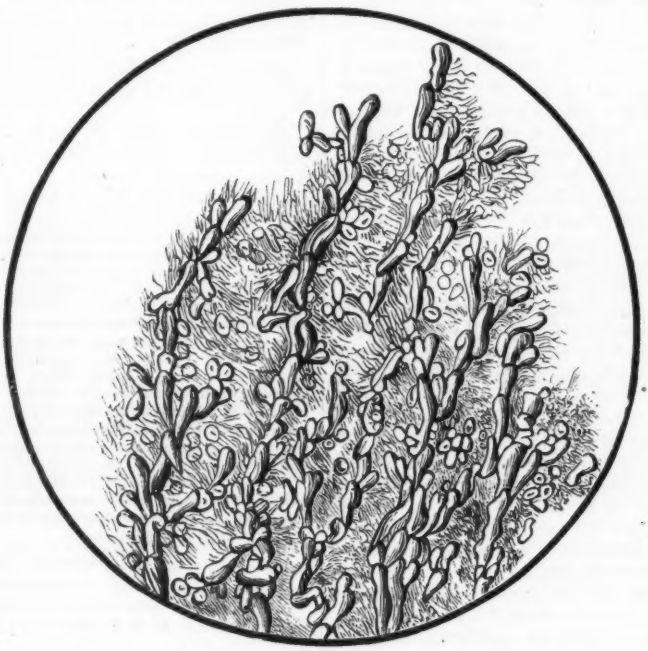
From an extensive use of both drugs, I believe the Honduras bark best in primary cases and the earlier forms of the secondary, but later, especially when there is itching or scaly eruption, the berberis is better. In some cases they are more efficient when combined.

Bacillus Tuberculosis.

By H. Stieren, M. D., Mason, W. Va.

MRS. M., 47 years old, who has been a very hard-working woman all her life up to about nine years ago, since which time through the generosity of her son-in-law she could enjoy comparative ease, has for a long time been afflicted with tuberculosis, and been for the last 15 months under my occasional treatment, which has consisted of calisaya bark (not quinine), phosphoric acid (no hypophosphites) and digitalis, with suitable rich nitrogenous diet, and has considerably arrested the progress of the disease.

Having obtained some of her sputum, I prepared it on four different glass-slips, which I shall call Nos. 1, 2, 3 and 4, by separating and spreading carefully with a long needle, washing with a mild spray of water, adding a few drops of alcohol and finally allowing to drain by slanting the slips. I must not forget to state, that I had triturated Nos. 2 and 3 with a glass rod, to possibly acquire different aspects. When almost dry, I subjected all four preparations to Koch's method, by immersing them in a shallow glass dish for 24 hours, in his Methylene Blue solution, then removing therefrom and pouring over them, and allowing to remain on for two minutes, the saturated, aqueous solution of vesuvin, whereupon I edulcorated with pure water till it ran off colorless, and then allowed to dry. The four slips, previous to treatment with vesuvin, had exhibited an even, beautiful blue, while now they presented to the naked eye the following appearance, viz., No. 1, a brown field with a separate, blue spot; Nos. 2 and 3, a mixed brown and blue field; and No. 4, a brown field of a slight greenish tinge. Exhibited in the microscope, at 155 diam. linear, contents of slip No. 1 developed themselves in the blue color retained, as, what I presume and feel confident to be, the true bacillus, on a blue field or plane consisting of innumerable fine fibres (see accompanying diagram), while the surrounding brown mass consisted of discolored animal tissue. Slips Nos. 2 and 3 were an irregular and shapeless mass of blue and brown mixed, caused no doubt by the trituration mentioned before, from which it might appear that the shape, if not the condition, of the bacillus is easily destroyed; while slip No. 4 apparently contains no bacteria at all. Having, by means of the camera lucida, made the very same day one microscopical drawing which accompanies this paper, I undertook the next day to make another from slip No. 1, by first moistening the slip with a slight current of steam and allowed it to become almost dry, but found that the blue contents of the slip had turned into a shapeless, broken, torn and cracked mass, which confirms my impression of the very easy disintegration, possibly decomposition of the bacillus.



BACILLUS TUBERCULOSIS. KOCH. 155 DIAM. LINEAR.

Translations.

Original Lectures on the Treatment of Apoplexy.*

Gentlemen—To devote a lecture to the treatment of apoplexy may seem to some of you useless, or even behind the times. This old word, apoplexy, to-day well-nigh obsolete, belongs rather to tradition

* By Prof Dujardin Beaumetz, Member of the Academy of Medicine, Physician to the Hospital St. Antoine, etc., Paris, France. Translated from advance sheets by E. P. Hurd, M. D., Newburyport, Mass., for The Therapeutic Gazette.

than to clinical medicine; nevertheless, I persist in my resolution, and I will tell you why. If by reason of the progress of pathological anatomy we are able to know the pathogeny of the various cerebral apoplexies, and follow step by step the hemorrhage from the production of the aneurism to the rupture of the same, and even the necrobiotic alterations of the encephalon, determined by emboli or thrombi, we are unfortunately unable in the living subject to establish a clear distinction between the effects of hemorrhage and those of migrating or autochthonous clots, which give rise to symptoms so similar, although the causes are so dissimilar.

Between the apoplectic attack resulting from hemorrhage into the cerebrum, and that resulting from cerebral anæmia, there exist, from a clinical point of view, shades of difference but slightly marked, and save in exceptional cases, we are reduced, in making our diagnosis, to conjectures; conjectures which are often falsified by the post mortem examination. As this apoplectic ictus has been the subject of numerous discussions which have deeply concerned therapeutics, it has seemed to me desirable to retain the word, and to set forth the treatment, which is likely to give you the best results. But before going farther, let us come to an understanding about the signification of the word apoplexy.

That sudden suspension of cerebral action, complete or incomplete, persistent or transient, which characterizes apoplexy, has had different interpretations according to the prevailing medical doctrines. Under the domination of the doctrines of Hippocrates and Galen, the cause of the apoplectic phenomena was ascribed to sudden arrest of the vital spirits, or even to the presence of pituitous humor in the ventricles of the brain. But from the commencement of the seventeenth century the progress of pathological anatomy demonstrated that it was rupture of blood vessels which, in the majority of cases, caused the apoplectic stroke, and Morgagni brought clearly to light the preponderating importance of cerebral hemorrhages. At the same time, authorities, while admitting the frequency of hemorrhage in the pathogeny of cerebral apoplexy, did not, at the end of the last century, consider that as the sole cause, and while granting sanguineous apoplexies, they also affirmed the existence of serous apoplexies, and even certain essential apoplexies, called *apoplexiæ sine materia.* But from the beginning of this century, and especially since the work of Rochoux in 1814, apoplexy has been regarded as nothing but the manifestation of cerebral hemorrhage or congestion, and the notion of essential apoplexy has been given up. The study of circulatory disturbances and especially of the vascular changes produced by embolism, soon modified the exclusive view of Rochoux, and to apoplexy by rupture of blood vessels was now added apoplexy by embolism, or by cerebral anæmia. Therefore, I shall adopt with some modification the definition given by Schützenberger, and shall call cerebral apoplexy the sudden suspension of cerebral action, produced by an internal cause affecting the circulation (vascular rupture, congestion or anæmia) acting directly on the eucephalon.

I shall not enter here into the description of the symptoms of apoplexy, for which I refer you to your text-books, but shall discuss the proper methods of treating this disease, unfortunately so common, giving reasons for such therapeutic hints as I shall offer.

But in order to understand the bases of our therapeutic endeavors, it is necessary that we should examine, as rapidly as possible, the pathogeny of the disease in accordance with the above definition. Cerebral apoplexy is the result of three great factors: congestion, more or less intense, of the brain; sudden arrest of the blood destined to nourish a more or less extensive department of the encephalon, or, lastly, rupture of one of the blood vessels supplying a region of the brain; the latter constituting what used to be called sanguineous apoplexy. Once these affections were pathologically classed in the group of hemorrhages, and supplementary, congestive, dyscrasic apoplexies were described. To-day we can expunge all these divisions, thanks to the discovery of miliary aneurisms made by Bouchard and Charcot. These pathologists have pointed out this capital fact, that rupture of the cerebral vessels is always preceded by an alteration of the walls of those vessels, veritable aneurisms, and that it is the rupture of these aneurismal portions which causes irruption of blood into the mass of nervous tissue, and all the consequent symptomatic and anatomo-pathological disorders which characterize the intra-cranial hemorrhage.*

Apoplexy by anæmia or necrobiosis, produces the same effects as sanguineous effusion, but by a mechanism altogether different. It occasions sudden cessation of the functions and death of a more or less circumscribed region of the brain, by reason of

* These aneurisms are undoubtedly the most frequent causes of cerebral hemorrhages, especially in the hemorrhagic apoplexies of old age. Charcot and Bouchard found them in the foyers (foci) and in the ochreous cicatrices of ancient hemorrhages, in the convolutions, corpora striata, optic thalami, and the pons. Visible to the naked eye, they appear in the form of little globular granules, whose diameter varies from two-tenths of a millimetre to one millimetre, and even more. They have a violaceous color, more or less deep, if the wall of the blood-vessel is thin, and the blood liquid; reddish brown or ochreous, or even black, if the blood is solid; bluish or brownish, if the parietes are thickened by proliferation of the connective tissue elements of the adventitious membrane.

They are met with everywhere, but especially in the convolutions, either on the surface or at the point of reunion of the cortical and medullary substance, and at the same time in the pons, and great basal ganglia.

The number of these aneurisms is very variable; from one or two to a hundred or more.

Bouchard believes these aneurisms (which are seldom or never seen before the age of sixty) to be only the concomitant of an alteration of the blood vessels much more general, a sort of arterial sclerosis analogous to that which Rokitanski described under the name of chronic periarteritis, but that it differs essentially from simple atheromatous and fatty degeneration. This vascular change affecting the entire arterial system of the encephalon, is especially conspicuous in the smaller intra-cerebral arteries, although the large trunks of the meninges and at the base of the brain may be pervaded by the same alteration, an alteration which consists in an exaggerated and often enormous multiplication of germinal elements in the interstices of the arterial trunks, and in the lymphatic sheath, and in atrophy of the muscular tissue. At the same time there is general dilatation of the vessel, with constrictions at various points where the circular fibres remain intact. In fine, we meet with abrupt dilatations in arteries thus modified, veritable aneurisms, whose rupture produces cerebral hemorrhage.

In the opinion of Charcot and Bouchard, the principal lesion in cerebral hemorrhage is peri-arteritis, or external sclerosis, while in the case of ramollisement, the lesion is endarteritis, or internal sclerosis. Zerker mentions an opposite view: that the lesion always commences by alterations of the adventitia.

(Cruveilhier, anatamo-Pathologique—Bouchard and Charcot, nouvelle Recherches sur la Pathogenie de l'hemorrhagié cerebrale, Arch. de Phys. 1868, p. 110—Bouchard, de la Pathogenie des hemorrhagies, Thesé de Paris. 1869—Leouville, des aneurysmes miliares, Th. de Paris, 1871.)

the arrest of the arterial circulation. We have here something comparable to the local gangrenes which accompany the ligature of the arteries of limbs, and this comparison is, moreover, so exact, that you know that the ligature of the carotid very often gives rise to an attack of apoplexy, with resulting hemiplegia of the opposite side.

This sudden stopping of the circulation in one of the arteries or arterioles of the brain, may have one of two origins: either it results from an alteration *in loco* of the arterial twig; chronic endarteritis of the vessel causing an autochthonous clot to be formed, which completely obliterates the lumen of the vessel; or else the vessel is sound, while the clot that obstructs it comes from a more or less distinct point of the arterial system, or from the heart itself, being an embolus.

Between these two states, apoplexy from effusion of blood, and apoplexy from necrobiosis, or agæmia, is placed another group of apoplexies thus far badly defined, and which result from sudden and intense congestion of the brain, congestive apoplexy, or *coup de sang*. It is easily understood how an afflux of blood, in great quantity, to the encephalon, or sudden stasis in the intra-cranial vessels, gives origin to a sudden but temporary arrest of the cerebral functions.

Having once these divisions well in mind, let us see how we can intelligently act when we have to deal with apoplexy from any one of these causes. I am assuming that we are in a condition to diagnosticate the particular lesion, a matter which I told you before is often involved in great difficulty.

As for cerebral hemorrhages we are to take into consideration prophylaxis and the treatment during and after the hemorrhage.

The rôle of prophylactic treatment is to prevent the production of these alterations of the walls of arteries which result in miliary aneurisms. It would seem that we are well nigh impotent in this regard. It is as much as ever if we can foresee these aneurisms by heredity, and according to the laws which Dieulafoy has established, which go to show that the greater part of cases of cerebral hemorrhage are witnessed in persons belonging to the same family. In the majority of instances these miliary aneurisms do not reveal themselves by any symptoms, and their rupture is the first indication which we have of their existence. The most that we can do, in persons predisposed, in order to avoid the rupture of these aneurisms, is to make use of all those hygienic and medicinal means which moderate the cerebral circulation; but I shall have more to say on this point when I come to speak of apoplexy from congestion.

The vascular wall gives way, the blood invades the cerebral mass, the patient has what is termed "a shock," he loses consciousness and becomes hemiplegic; you are called in haste, what are you going to do? Twenty years ago the response would have been forthcoming; you would have made haste to take your lancet and bleed the patient freely. This was one of the rules of therapeutics concerning which there was little or no variance of opinion.

Since the time of Aretæus, Paul of Ægina, Cœlius Aurelianus, Avicenna, Baglivi, down to Rochoux, Bouilland, Monneret, Valleix, Grisolles, etc., the whole world was agreed that bleeding (or rather bleedings) was the proper way to treat apoplexy from blood effusion, and it was as much as ever if any extenuation of this procedure was granted in the case of anæmic and debilitated subjects. The divers indications were pointed out for general bleeding, and for derivative and revulsive bleeding. It was a matter of serious discussion whether it were preferable to practice phlebotomy in the jugular, as Valsalva taught, or in the saphenous, as Chanffards advised, or even in the pituitary membrane, rather than at the bend of the elbow, as Cruveilhier had proposed. One bleeding was not enough; you must bleed several times; at the same time Rochoux advised not to bleed more than four times in the generality of cases. They also discussed whether it were not better to bleed the paralyzed side than the sound side. Finally they went even farther, and Bell, Nyenman, Zuliani and Gatherwood, taking their stand on hydraulic principles, more or less disputable, substituted arteriotomy of the temporal arteries for phlebotomy. Claudius Barbier, of Lyons, went ahead of all his contemporaries and predecessors in this practice; comparing the cranium to a tight cask, he advised that when the vein was to be opened the skull should be trephined.*

To-day, knowing better the mechanism of apoplexy, we ought to repudiate this kind of treatment, because nothing goes to show that we can at once correct the hemorrhage which results from rupture of some blood vessel, and to accomplish this result by bleeding, you would have to bleed the patient to syncope, a very dangerous procedure. Moreover, who is the physician who would now think of arresting hemorrhage from a small artery by blood-letting? So then blood-letting is not to be thought of in the apoplectic seizure, for it is useless, and may be dangerous. It cannot prevent the consequences which result from rupture of the miliary aneurisms; it weakens the patient; places him in conditions of hydræmia and anæmia which oppose the clotting of the blood in the ruptured vessels and the obliteration of those vessels, and on this very account favors new hemorrhages. It is plain then that we are impotent at the moment of the attack to combat the effects of the rupture of the cerebral arteries, and that our rôle consists in attending to symptoms as they arise. Observe if the alvine evacuations are free, if the functions of the bladder are regularly performed, place the patient in the best hygienic conditions possible.

Either the hemorrhage is considerable and will prove fatal, or it has affected only a limited part of the encephalon; the ensuing paralysis, then, is sharply defined, and, according to the extent of the hemorrhagic *foyer*, it gradually disappears. In cases of this kind we may do much to prevent the inflammatory phenomena which accompany the disorders produced by the presence of the clot in the brain, and also to hasten the resorption of the clot.

To fulfill the first indication blood-lettings may do us some service. Much as I am opposed to this spoliative treatment at the mo-

*Sir Charles Bell believed that arteriotomy was preferable to phlebotomy in the case of extravasation of blood in the brain; reasoning from doubtful hydraulic principles he thought that the former operation diminished, while the latter increased the afflux of blood to the brain. Barbier would even bore a hole in the cranium to avail himself of atmospheric pressure in depleting the brain. (Bell—The Different Effects of Arteriotomy and Phlebotomy in Apoplexy—British Medical Journal, January, 1843. Barbier—A New Mode of Treating Apoplexy—Jour. des Conn. Med., Juillet, 1843).

ment of the attack, I am quite prepared to recognize its utility in the case of encephalitis. So, whenever after an apoplectic seizure, you note the appearance of fever and the other symptoms which characterize inflammation of the cerebral substance, you ought to apply leeches over the mastoid processes, or even take blood from the arm.

You may also apply ice to the head. Lallemand thinks that cold applications may do good during the attack itself. I do not agree with him, and believe that the only benefit which you can derive from this means is obtained in the inflammatory stage which succeeds the hemorrhage.

In order to avert new hemorrhages, and with this end in view, to combat congestive tendencies, drastic purgatives are indicated. It has been advised to give iodide of potassium on the ground that this medicament in small doses has the property of diminishing congestion of the encephalon; on data, more theoretical than practical, is also based the employment of ergot of rye in such cases.

As for the paralysis, in consequence of the destruction of cerebral tissue, it decreases in the ratio of absorption of the products of the hemorrhage. Many measures have been counselled to hasten the return of muscular movement. Some have proposed massage and stimulating friction; others, from purely empirical considerations, certain medicaments, such as arnica; others still, in accordance with more exact physiological data, have proposed the use of strychnia and electricity.

I will say but little of frictions and massage, and I see little that is disadvantageous in the employment of these means, except it may be the danger of provoking traumatism of the paralyzed parts, already the seat of trophic disturbances often sufficiently intense to cause phlegmons and gangrene. As for arnica and all stimulating medicines, such as melissa, mentha, and lavender, they do not play any active part. It only remains to consider strychnia and electricity.

Strychnia was especially employed by Magendie and by Bradsley. It was hoped that the contractions determined by this medicament would hasten the return of muscular movements. You should be very careful in the employ of strychnia in hemiplegia, for this alkaloid produces congestion of the cerebro-spinal axis; a congestion always injurious when the patient is suffering from the effects of cerebral hemorrhage.* On the whole, it is better to rely on electricity.

Electricity accomplishes two purposes: it opposes the trophic disturbances which accompany hemorrhages into the brain, and above all it combats the consecutive alterations in nerves which find their central termination in the part of the brain which has been destroyed. Bouchard has described for us the march of these secretory scleroses, which engender persistent disorders in the paralyzed parts. You can employ here the galvanic current, or the faradic current. When you wish particularly to influence the nutrition of paralyzed parts, you employ galvanism; when you wish to provoke muscular contraction and prevent atrophy in paralyzed marches, you use faradisation. But you should exercise great caution in the use of electricity and not resort to this therapeutic agent till all the congestive or inflammatory symptoms have disappeared. Electricity, when too long applied (or in too strong currents) induces in the corresponding parts of the brain an excitation more injurious than useful.

In the case of apoplexy from embolism or thrombosis, we can do little in the way of prophylaxis before the attack. It is necessary to avoid all circumstances which favor the production of an embolus in the left heart and in the arterial system, or those alterations of the encephalic vessels which give origin to autochthonous clots. Here, however, we are well-nigh powerless. When the apoplectic seizure has taken place, and a clot has caused obstruction of an important blood vessel, inducing necrobiosis of the part of the encephalon supplied with its nutrient blood by that vessel, our rôle is still an impotent one. We cannot by any therapeutic measures re-establish the interrupted circulation, and we are just as powerless to hasten resorption of the necrosed parts. As you see then, when we are concerned with cerebral necrobiosis, we can only be spectators of the disorders produced without the ability by modes of treatment, more or less energetic, to arrest the evil at its commencement or modify its evolution.

It remains to consider apoplexy due to cerebral congestion. Here we can accomplish much more, and we can in a measure successfully oppose cerebral hyperæmia. It is to this group of apoplexies that we have seen applied the name apoplectic temperament or constitution. You know the description that has been given of typical cases; you have heard described the flushed countenance, the injected eyes, the short, thick, massy neck and large shoulders of apoplectic subjects who experience under the influence of slight excitements bursts of heat and flashes which bespeak the imminence of dangerous cerebral congestions.

There are a great number of affections of which cerebral hyperæmia is a symptom. The description above given applies to arthritic patients with congestive tendencies, to individuals affected with mitral disease, to certain emphysematous subjects, in all of which cases you will observe the congestive or apoplectic facies above set forth. Cerebral hyperæmia arises from a great number of causes, and the treatment ought to vary according to the affection of which it is an expression.

Already when treating of diseases of the heart I told you what you ought to do to combat congestive cerebral tendencies, and I need only remind you that the most of the therapeutic measures which have been proposed for apoplexy are directed not to the hemorrhage, but to the hyperæmia, and this is the end of both hygiene and prophylaxis. A long time ago Lancise showed the importance of hygienic therapeutics in these cases, and your attention ought to be directed principally to these two points: diet on the one part, and regularity of the bowels on the other.

As for diet you ought rigidly to proscribe all those aliments and all those beverages which are likely to induce cerebral excitation. Your patients must

[* In American practice, strychnia is much given in hemiplegia, but with most physicians, more from routine, and from some vague idea that it may be useful to arouse dormant motor power than from any experience of its utility. If given, it should be given very cautiously and in a commencing dose not exceeding one-twentieth of a grain. The dose may be gradually increased till some jerking or tension is felt in the paralyzed muscles. (Vidè Stillé Therapeutics, vol. 2, p. 155.) A good form is the liquor strychniæ; dose five to ten drops. TRANS.]

abjure altogether wines, generous liquors, in fact alcohols in general, which have a doubly deleterious action in apoplexy, for they not only produce hyperæmia of the brain, but they also engender alterations of the blood-vessels, the result of which is rupture of those vessels or obturation. You should caution your patient not to use too highly-seasoned food, and should put him on a regime consisting principally of white meats and fresh legumes and other vegetables; fatty and feculent matter should be excluded, and, in short, everything which can augment the production of fat in the economy.

Do not forget that the hyperæmia, and the apoplectic tendencies which are its consequences, are often connected with obesity. Polysarca in hindering the play of the diaphragm, and especially in opposing the regular functioning of the heart by fatty accumulation around that organ, and by the alteration of the heart muscle which attends it almost constantly, gives rise to hyperæmia of the brain; and it is for this reason that the hygienic treatment of obesity is quite applicable to congestive apoplexy. Therefore, you should establish by daily exercise a relation always exact between nutrition and combustion, and you should combat by appropriate means all the symptoms produced by slackened nutrition.

You should also endeavor to promote a healthy state of the digestive tube. Constipation ought to be avoided at any cost, and you ought always to keep up a certain state of diarrhœa in these congestive and plethoric patients. Here the purgative mineral waters are indicated—Pullna, Freiderichshall, Hunyadi Janos, Ems, Sprudel. Here you may give aloes with excellent effect, which, besides unloading the intestines, causes congestion of the rectum and produces hemorrhoids. A great many apoplectic patients have piles, and these latter act as safety valves to the head, both by reason of the congestion which they determine in the region of the anus and the fluxes of which they are the seat.

The alkaline waters are good in these cases, not because they anæmiate the patient, but because they regulate nutrition. You should watch the urine of your patient, for many apoplectics are gouty, and you ought always to keep the urinary secretion abundant.

As a pharmaceutical means, besides purgatives and diuretics which are always of some utility, you may make use of arsenic, iodide of potassium and aconite. The latter diminishes in a noteable manner cerebral congestion. Dry and wet cups, leeches, and sometimes even venesection may be valuable auxiliaries. With regard to venesection: much as I am opposed to blood-letting in the period of hemorrhage, I am convinced that in cases of great hyperæmia of the brain, with flushing and lividity of the countenance, blood-letting may temporarily do some good.

Such are the therapeutic rules applicable to the three varieties of apoplexy to which I have called your attention. Our treatment would be more accurate and scientific were we always able to distinguish the one from the other of these three varieties. Unhappily this is not an easy matter. If we can generally diagnosticate cerebral hyperæmia, it is really impossible to distinguish hemorrhagic apoplexy from apoplexy by anæmia, and we can only make hypotheses and conjectures when we come to actual experience at the bedside. This very circumstance should lead us to be chary with regard to any active treatment during or after the apoplectic seizure. Better to do nothing than to do harm.*

The diagnosis of meningeal hemorrhage is difficult. Meningeal apoplexy is, however, likely to be attended with contracture, as an initial symptom. In hemorrhage at the base of the brain, contracture is a late symptom.

Chronic ramollissement is distinguished from cerebral hemorrhage by its march. During its progress it is accompanied by cephalalgia, vertigo, intellectual enfeeblement, numbness which is habitual, and sometimes by contractures.

More difficult is the diagnosis of acute ramollissement. The *debut* may be apoplectiform, and without prodromata. At the same time the loss of consciousness is apt to be more transient and less complete in ramollissement. Moreover, in ramollissement by embolism, lesions may often be noted in the organs, which, produced by the same cause, shed light on the diagnosis (pulmonary apoplexy, infarctus of the spleen, hematuria, etc.). After the attack the hemiplegia is alike in both diseases, and it is almost impossible to distinguish them. You must be guided guided by the evolution of the disease.

In softening, and especially senile softening, from endarteritis, the symptoms often present oscillations; the paralysis is less complete at certain hours of the day. Aphasia is a symptom less common in apoplexy from hemorrhage than in ramollissement.

According to Charcot, conservation of consciousness with sudden invasion, belongs rather to ramollissement; variable hemiplegia belongs to it exclusively, and aphasia almost exclusively.

Hemorrhage often coincides with hypertrophy of the heart and Bright's disease. Cerebral ramollissement by embolus occurs in the same patients, and accompanies visceral infarctus.

Ramollissement by thrombosis is seen especially in individuals who are a prey to tuberculous or cancerous cachexia. Ramollissement by senile endarteritis is frequently accompanied by atheromatous degeneration of the arteries of the extremities.

* The following foot note by the author gives some hints of great diagnostic value in these difficult cases:

In the case of cerebral congestion the march of the disease clears up the diagnosis. In a few hours all the morbid symptoms disappear.

In intra ventricular hemorrhages, or hemorrhages into the pons, there are sometimes convulsive seizures simulating epilepsy. The aspect of the patient, the tongue which often presents fissures or cicatrices, the dilatation of the pupils, the temperature and then the march of the disease remove all doubts.

The Bacillus of Glanders.

Israel has succeeded in finding two forms of bacilli in glanders, and one of these he has also successively cultivated. Rabbits vaccinated with the fifth and sixth cultivations became infected and died. Post mortem examination showed in them characteristic lymphangitis, ulcers in the nose, and isolated patches in the lungs. Experiments made with pus from abscesses in living animals resulted negatively, as to cultivation in fluids and solids (Koch's preparation). Nodules resembling bacteria were found which leads to the deduction that the bacilli possessing only slight power of resistance had perished.—O. Israel, *Berlin. Klin. Wochenschr.*, No. 13, 1883.

The Therapeutic Gazette

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Alleged Short-Weight Quinine Pills.

WITH one possible exception, there is no agent of the materia medica whose physiological and therapeutical properties vary to such an extent with the variations in the dose, as quinine. In addition to its effect in stimulating or depressing function, it has also specific properties, such as germicide, antiseptic, antiperiodic, etc., the union of all of which enlarges the field of its applicability beyond that of the vast majority of other drugs. Quinine is, consequently, the most extensively employed of medicines, and, owing to its objectionable bitter taste, its exhibition in the convenient forms of gelatine- and sugar-coated pills, through which this objection is overcome, is most generally resorted to. For these reasons, chiefly, it is very highly important not only that the purity of the salts of this alkaloid be fully assured, but also that the quantities as contained in the different forms in which they are sold, be precisely as they are represented. To this end it becomes the profession to be very jealous, and we heartily endorse every means calculated to ensure the qualities indicated in this pharmaceutical product, provided always that such means are legitimate and correct, and thus not liable to work injury to honest manufacturers concerned.

We submit the above by way of introduction to another reference to the question of quinine-pill analysis, rendered necessary by a recent effort in this direction by Prof. C. Lewis Diehl, and the results of which are published in the April issue of the Pharmacist and Chemist, of Chicago. Our readers will readily recall the analysis by the anonymous "commissioner" of the Philadelphia Medical News, a gentleman who lacked the manliness to attach his name to the reflection which he sought to cast on the integrity of the manufacturing chemists of this country, and whose analysis was backed up by a highly sensational editorial article by his employer. What firm so utterly bereft of wisdom or business sharpness, to put it on no higher ground, as to deliberately jeopardize capital, and reputation, which is even more valuable, for the insignificant saving which could be effected by the shortage, conceding it to be even as great as charged? But the News' analysis has been so effectually picked to pieces by competent chemists who have not hesitated to attach their names to their criticisms, that the "commissioner" has not since oped his mouth. But the thorough exposé of the inaccuracy of this analysis has not deterred our esteemed Chicago contemporary from imitating the News by employing a "commissioner," showing its originality, however, in not concealing the paternity of the analysis. We would fain hope that our friend of the Pharmacist was not actuated by any mere desire to create a sensation, with a view to establishing a reputation for his journal as an agitating medium, in thus endeavoring to unearth the mare's nest after the News had failed. He has, however, achieved the proud distinction of a complimentary notice from the News (see page 257 THER. GAZ.), and that is something. Such little mutual admiration societies should by no means be frowned down. They hurt no one and doubtless please all who participate in them.

We have not had time to make a thorough examination of Prof. Diehl's analysis, but others have, and we shall content ourselves, for the present at least, with a reproduction, in our periscopic department, of the press comments thereon. The American Pharmacist, of New York, is charitable enough to believe that Prof. Diehl must have entrusted the important mathematical calculations of his analysis to an assistant, whose work he has failed to review, for surely no man of his reputation could be guilty of deliberately publishing such errors. We commend the American Pharmacist's article (reproduced on page 254 THER. GAZETTE) to the careful perusal of our readers. Taken in connection with our analysis (see page 201 of our last issue) of pills as made by retail pharmacists, it effectually disposes of an important phase of this question. The Druggist, of Chicago, in its May number (see page 255 THER. GAZETTE), points out similar errors. New Remedies, of New York, while expressing confidence in Prof. Diehl's ability, criticizes his method and "doubts whether the six most competent quinine analysts in the world would have obtained identical results following this process." (See page 256 THER. GAZETTE). The remarks of the Oil, Paint and Drug Reporter (see page 256 THER. GAZETTE) are also worthy of consideration in this connection.

We fully agree with the Medical News that the results of its and its Chicago contemporary's analyses are very important, but we fail to assign the importance to the same features to which it does. Instead of the analyses demonstrating the necessity of manufacturers' revising their working formulæ, if they would retain the confidence of the profession, they demonstrate very conclusively the necessity of improved methods of analysis by chemists desiring to create a sensation, if they would save themselves from ridicule. The results are, moreover, important in the difference of rank as accorded the different manufacturers by the two analysts. For instance, Messrs. John Wyeth & Bro. were found by the News commissioner to put 21-100

of a grain more of quinine in each pill than was called for by the formula, thus placing them at the head of the list for honesty, among American manufacturers, while Prof. Diehl pronounces their pills as, with one single exception (Tilden & Co.), the most deficient of quinine of any on the list! Perhaps this discrepancy may be accounted for by the fact that the News' commissioner did not select his pills from ordinary stocks as carried by druggists, it being, probably, quite as convenient for him to procure a bottle of pills direct from the manufacturer. There was certainly grounds for remark in the fact that among all the American manufacturers these particular townsmen of the News alone furnished more quinine than they asked pay for.

There has been a very free expression of satisfaction by reasonable members of the profession, that the analyses as published, faulty though they be, make as good a showing as they do for the manufacturing pharmacists. It has been customary with some to insinuate grave derilections on the part of the latter, in the matter of the quality of their products. These analyses, therefore, conducted evidently by chemists not prejudiced in favor of the manufacturers, and showing no greater deficiency, will very effectually allay such suspicions. No reasonable man will fail to discover in the inevitable waste in compounding the pills a satisfactory explanation of even the shortage alleged.

How Much Quinine is There in "Pure" Quinine?

THE recent analyses that have been made of quinine pills have attracted general attention to the fact that sulphate of quinine, as an efflorescent salt, is liable to considerable variation in its composition. There seems to exist still a good deal of confusion even in the minds of those generally well informed on such matters, in regard to the proportion of quinine actually found in the sulphate of commerce, and the standard adopted by the U. S. Pharmacopœia.

Thus in his analysis of the quinine pills of the market, Prof. Diehl makes the statement that the officinal salt contains eight molecules of water of crystallization, but bases all his calculations on an amount corresponding closely with seven molecules.

In a recent pharmaceutical meeting Prof. Maisch made the statement (Am. Jour. of Pharmacy, May, 1883): "It should be remembered that crystallized quinine sulphate contains eight molecules of water of crystallization, or two per cent. more than is given in the Pharmacopœia," and Mr. Trimble asserted that the commercial salt sometimes contains more than the eight molecules which are presumed to be the normal quantity.

Prof. Maisch is right in saying that the Pharmacopœia gives quinine sulphate only seven molecules of water of crystallization (14.45 per cent.), *in the formula*, but he has overlooked the circumstance that the Pharmacopœia expressly *allows* eight molecules (16.18 per cent).

The facts in the case appear to be these: Sulphate of quinine, recently prepared, contains about 15.32 per cent. of water of crystallization (Jobst and Hesse). This corresponds with 7½ molecules of water. Many samples of quinine sulphate offered in the market contain more than this amount, but the quantity rarely exceeds 16 per cent. of the weight of the salt, and hence does not often exceed eight molecules (16.18 per cent.), as Mr. Trimble implies.

We have had occasion to test a large number of samples of quinine in the original packages, which are generally so secured as to prevent the escape of any moisture, and we have found the amount of water to vary from 11 to 16 per cent., exceeding the latter figure in two only out of ninety samples. The average in 65 samples examined during the past 18 months has been 14.08 per cent., certain brands, however, containing almost uniformly upwards of 15 per cent.

Quinine sulphate exposed to an ordinarily dry atmosphere loses speedily all but two molecules of water (4.6 per cent.). If the remainder of the water is driven off by drying at an elevated temperature (110° C.), the salt will absorb again from the atmosphere the same amount of water. It would seem desirable that a salt of this composition should be made the official quinine sulphate, but this has not as yet been done. Of course, much of the quinine sold in retail drug stores has this composition, and is therefore considerably richer in quinine (alkaloid) than the salt of the U. S. P.

The German pharmacopœia permits 15 per cent. of water of crystallization, and this for practical purposes is better than a theoretical standard, based upon either seven or eight molecules of H_2O, provided the uneffloresced salt is to be retained as the officinal quinine sulphate.

The proportion of quinine (anhydrous) contained in the sulphate of these various standards is as follows:

Containing $8H_2O$ (limit U. S. P.), 72.81 p. c.
Containing 15 p. c. H_2O (Ph. Germ.), 73.83 p. c.
Containing $7H_2O$ (formula U. S. P.), 74.31 p. c.
Containing $2H_2O$ (effloresced salt), 82.86 p. c.

Prof. Diehl's analysis seems to indicate that commercial quinine sulphate from the most reputable manufacturers, is contaminated with a much larger proportion of the cheaper alkaloids of bark than has heretofore been considered admissible.

He reports a sample of pure quinine manufactured by Powers & Weightman, as containing total alkaloid equivalent to 102.4 per cent. of its weight of crystallized sulphate (containing $7H_2O$), while the amount of quinine present, calculated as crystallized sulphate, was only 96 per cent. The difference, 6.4 per cent., must, therefore, have been salts of the cheaper alkaloids.

Prof. Diehl does not state whether the behavior of the sample with Kerner's test, or that of the U. S. P., justified such a conclusion; we should ourselves be greatly surprised if a sample of quinine of that brand did not respond satisfactorily to those tests, which are believed to indicate distinctly 1 per cent., or 1.5 per cent. at most, of foreign alkaloids, but the conclusions drawn by Prof. Diehl have been already widely quoted as authoritative, and cannot, therefore, be ignored. Our own conviction is that these conclusions have been too hastily drawn; the more so as the results reached are not altogether self-consistent.

The total amount of alkaloid obtained was more than 2½ per cent. in excess of the quantity theoretically present, and after this had been dissolved in ether and evaporated to dryness, its weight was

nearly three per cent. in excess of the calculated weight. If the foreign alkaloids were cinchonine or cinchonidine the weight would have been less, not more than theory would require; if quinidine the weight would not be affected since the two alkaloids are isomeric.

Moreover, this singular conclusion is deducible from the professor's figures: The quinine contains sulphates of foreign alkaloids 6.39 per cent., salts of alkaloids insoluble in ether, *minus* 0.31 per cent., salts of ether soluble alkaloids other than quinine, 6.7 per cent. This seems to us like splitting hairs—and very fine ones at that. For the present we prefer to accept conclusions drawn from applying the ordinary tests, and to believe, in consequence, that most of the quinine sulphate employed by reputable manufacturers is free from any considerable admixture of foreign alkaloids, when purchased, and we know enough of the manufacturers to be sure that, whatever conscience might permit, they would not risk their reputation for the trifling pecuniary gain to be derived from a fraudulent addition of five or ten per cent. of cinchonidia or quinidia to the quinine they use.

If adulterations are practiced anywhere, we are as much interested as anyone in ferreting them out, but we think only harm can result from charging gratuitously upon manufacturers dishonest practices of which they are innocent.

American Manufacturing Pharmacists.

IN the course of an article on manufacturing pharmacists, the text for which it discovers in an article by Dr. Lindsley, of Connecticut, and published in the Proceedings of the Connecticut State Board of Health, the New York Medical Journal, of April 28th, pays a high compliment to American manufacturers of legitimate pharmaceuticals. It says they "have accomplished much for which the profession is quite ready to acknowledge its indebtedness; they have helped materially to carry the fame of American excellence in pharmacy abroad, as may be seen from the repute in which their preparations are held in Great Britain and in various other foreign countries. And, with all this, we have yet to see any evidence of their having worked any injury to the apothecary. Even taking the recent strictures of one of our contemporaries upon quinine pills provided by some makers as found in data strictly accurate—and it should be borne in mind that the accuracy of these data is questioned—who can suppose that the extemporaneous dispenser, who is called upon to make up a lot of pills according to a magisterial prescription, working hurriedly amid the customer's manifestations of impatience, will turn out work that can be more depended on for uniformity than that which is produced on a large scale by skilled manipulators?"

In view of such a defense and the conceded integrity of some of our manufacturing pharmacists whose products have recently been receiving exceedingly complimentary notices from the medical press of Great Britain, it is difficult to concede the honesty of the intentions of those who seek deliberately to magnify into mountains the molehills of shortages which it has been abundantly demonstrated are inevitable as a result of waste in the most carefully conducted laboratory, whether wholesale or retail, and indeed more liable to occur in the latter. It is by no means an unfounded suspicion that this agitation is the latest and despairing effort on the part of the nostrum ring, or pseudo-pharmacists whose methods have been so effectively exposed of late years. An arousal of the profession to the immense damage which this interest has wrought to legitimate medicine, has resulted in a very material falling off in its business, and it is not to be wondered at that some scheme of retaliation has been adopted. But such devices are doomed to miscarry from their very inception. Physicians have learned to form their estimate of the merit of the various brands of pharmaceutical preparations through their use of them, and they are not to be shaken in their allegiance to those whom they have tried in the crucible of experience, either by the findings of incompetents, or by sensational articles.

Medical Officers of the Navy and New Remedies.

WE reproduce in the periscopic department of our present number, reports on certain new drugs as they have appeared in the proceedings of the Naval Medical Society. We are exceedingly pleased to be able to place before our readers such reports from such a source, alike on account of their intrinsic merit and because they are the first fruits of a system of investigation in this direction by that branch of the service, which has in it very unusual possibilities. No one is more alive than we to the difficulties and liabilities to inaccuracies and half-results, attendant on the non-systematic method of determining the therapeutic properties of drugs, which almost necessarily obtain in the practice of, perhaps, the majority of general practitioners. These inaccuracies and half-results are not at all times avoidable, and principally owing to the fact of the imperfect control of the patient. It is only when the physician is sufficiently enthusiastic in the investigation, to be stimulated to extra precautions, that the results are of such a nature as afford reliable data as a starting point for others. Fortunately, a goodly number are thus enthusiastic, and it is to their efforts at improving the materia medica that the considerable progress in this direction during the past decade is due. But the work accomplished is not as great as it might have been. The following quotation from Dr. Hudson's report is particularly to the point: "The real value of unknown drugs can only be established by repeated and careful experimentation, and this is often difficult of carrying out, in the hurry of a busy practice, or in the reluctance to the use of new and untried remedies, when the speediest restoration of the patient is desirable. It is, therefore, to the general interests of medical science that, wherever it is practicable, the physiological and therapeutic effects of new remedies should be observed and recorded; and perhaps with no class of professional men are opportunities with this view more unrestrained or convenient, than among the medical officers of the navy."

In regard to the reports from the navy medical officers, as we have reproduced them, we are pleased to find them so completely confirmatory of claims previously advanced for the respective drugs. That by Dr. Streets bears evidence of greater thoroughness of investigation than that by Dr. Hudson.

While we would not counsel favorable conclusions from hasty or superficial experiments, we would equally oppose unfavorable or half-hearted reports based on insufficient data. Justice to the particular drug as well as the true spirit of progress, demands thorough and extensive trial as a qualification for an opinion.

Enterprise in Business.

UNDER this heading the Philadelphia Medical News aims a well-directed blow at that phase of the enterprise of proprietary medicine manufacturers which shows itself in the published certificates of physicians to the efficacy of their compounds. It calls attention to the proneness of physicians to sneer at the readiness with which clergymen lend their names to every medical circular that is presented to them. The day for such sneers, it says, has gone by; we live in glass houses. It divides the doctors who sign these certificates into two classes: first, well-known good-natured men, with weak moral spines, who advertise the medicine, and secondly, ill-known, worldly-wise men who are advertised by the medicine. This division must commend itself as an admirable one to all who will take the pains to analyze the motives of the signers, in connection with the facts as they are presented. Our contemporary closes its note by a reference to a "circular (only, of course, 'to the medical profession') made more obnoxious than usual by the lithographed signatures of four well-known New York medical men, four also well-known Philadelphians and six irregulars, also equally divided between the two cities." The majority of these, it says, do not need advertising. "Why then," it asks, "should they place themselves in such an undignified and unethical position as to allow their names to be used by a commercial firm for its own profit?" It might also have asked, Why should they thus encourage quackery and the direct sale of nostrums to the public without the prescription of the physician, thus not only exposing the patient to direct injury but also ignoring professional interests? And why should they thus stultify their allegiance to the code of ethics, which very explicitly condemns the giving of such certificates?

Seeds from the Antipodes—Abrus Precatorius (Jequirity).

WE beg to tender to Baron Ferd. von Mueller, Government Botanist, at Melbourne, Australia, our thanks with the acknowledgment of our receipt of an enclosure of a small quantity of the following seeds: Alexandrian senna, crop of 1883, from the Royal Botanic Garden, of Kew, and which grows only in regions free from frost; Alexandrian senna which may be cultivated in the extreme southern states of this country; fresh seeds of the best cinchona suited for cultivation in Southern California and similar climates; and fresh seeds of the Abrus Precatorius (Jequirity). The latter are of more than ordinary interest in connection with notices which they have recently received in connection with the treatment of inveterate pannus. In the treatment of this affection the inoculation of the eye with gonorrhœal virus has has been the usual means resorted to, with a view to exciting such inflammation as running its course will leave the cornea clear. The objections to this method are, however, so grave that it has been resorted to only because of the absence of any other means. De Wecker experimented with infusion of jequirity to the same end, and with results highly satisfactory in their nature. Others, on his suggestion, have tried the same means and with corroborative results. The application is not painful nor occasions any discomfort, and the artificial inflammation excited requires no treatment further than the confinement of the patient to a dark room until it subsides, which it usually does in from eight to twelve days. In the east the seeds are said to be used in the form of a paste, as a local irritant in sciatica, paralysis and nervous diseases, and rubbed on the scalp as a remedy for alopecia.

We shall be pleased to distribute the above samples of seeds among such of our readers who reside under the requisite conditions for the growth, and who may desire to attempt their cultivation. Any such will please address the editor of this journal, enclosing stamp for reply.

A Lesson from Recent Analyses.

THE faultiness of the methods pursued by the two analysts who have recently sought to shake the faith of the profession in legitimate manufacturing pharmacists, has been very fully shown. But for our present purpose we may concede their accuracy, and even then the results, as they have been reported, are singularly complimentary, in view of the suspicions of adulteration and sophistication in which it has been sought to involve wholesale pharmacists. When it is remembered that the deficiency from inevitable waste, in a prescription for extempore quinine pills, is greater than in the same number of sugar- or gelatine coated pills made by the manufacturing pharmacist, the suspicion of deliberate intent to defraud in the matter of weight is effectually dissipated. There has also been much suspicion breathed of the adulteration of quinine with cinchonidia, salicin, etc. The analyses certainly remove all such suspicion from the leading manufacturing pharmacists, and establishes the fact that if such adulteration do exist it must be in the salt as it is sold in bulk, and not as it is sold in ready-made pills.

Koch's Bacillus.

IT has been the fortune of but few to have beheld this microscopical entity, which has been the most fruitful cause of death, and whose alleged discovery has created so much commotion in scientific circles. Distinguished microscopists have searched for it in vain and many have denied its existence, one boldly declaring that Koch mistook certain fat crystals for the bacillus. Koch retaliates on his critics by charging them with incapacity, and in this he is warmly supported by those who have been fortunate enough to bring the microzyme within the field of their lenses. We have never gone out on a voyage of discovery for the parasite, and probably, in common with the many who have searched for it in vain, would fail to recognize it when we should see it. Dr. Stieren, in our present number, gives us a drawing of what he has discovered and claims to

be the bacillus. He may be correct, but it would be no disparagement of his ability as a microscopist to doubt the correctness of his picture. It bears a stronger likeness to the fat crystals which Schmidt declares deceived even Koch, than it does to the bacillus as figured by W. Watson Cheyne, and a chromo-lithograph of which is before us. We have never seen an unquestionable Koch bacillus, and cannot say which of these pictures is the true one.

Anonymous Correspondents.

IN common, we presume, with journalists generally, we are the occasional recipients of anonymous communications. We have before us now, one signed "Medico," on the subject of druggists and physicians, and the code of ethics. It is a readable article, but must be rejected because of the failure of the writer to enclose his proper name and address. Under no circumstances are we responsible for the views of our correspondents, and while we do not object to publishing an article over a *nom de plume*, we must insist on being furnished with its writer's name and address, for our own private use, and as an earnest of good faith.

Roberts' Issue Plasters.

WE have received a sample of issue plasters prepared by Roberts & Co., of Rochester, N. Y., which are claimed to affect the tissues more deeply and with less pain than the ordinary cantharidal plaster, croton oil, or the other counter-irritants in general use. Their properties especially adapt them to the creation and maintenance of the permanent issues, so necessary in the treatment of chronic inflammation of serous tissue, sciatica, etc.

Book Reviews and Notices.

The Transactions of the American Medical Association Instituted 1847. Vol. XXXIII. Philadelphia: Printed for the Association. 1882.

This is a much smaller volume than would have been expected from such a large meeting. Evidently it is not numbers that furnish such full, rotund volumes as have, with the exception of the last, been sent out by the association. Nevertheless, it contains some valuable papers: The address of Dr. P. O. Hooker, who as first vice-president, was its presiding officer; the addresses of the chairmen of the different sections, especially the address of Dr. Henry O. Marcy, chairman of the section on obstetrics, etc.; the address on state medicine, by A. L. Gihon, M. D., U. S. Navy; the papers of Dr. Shoemaker, of Philadelphia, which attracted considerable attention; and the paper on serous diarrhœa and cholera morbus in infancy, etc., by N. S. Davis, M. D., Illinois. The Report on American Medical Necrology, by Dr. J. M. Toner, was full and exhaustive.

On the whole, the volume is a good one and probably is the last (excepting the Index) that will be published, the medical journal of the association taking its place. We shall miss its annual visitation, with its full reports of the doings of the association and the lists of its officers from 1847 down to and including those for 1883. But such is fate. Modern progress demands a "new departure," and we only fear that few members will at the end of each year have a bound complete copy of the association medical journal.

Although late in making its appearance, which we are told arose from causes unavoidable, it is issued in the same neat style of its predecessors.

The officers for 1883 are John L. Atlee, M. D., president; W. B. Atkinson, M. D., secretary; Richard J. Dunglison, M. D., treasurer, and the next place of meeting Cleveland, Ohio, on the first Tuesday in June.

Tenth Annual Report of the Secretary of the State Board of Health of the State of Michigan for the Fiscal Year ending September 30, 1882. By authority. Pages 592, with a full index.

This is the usual report from the State Board of Health to the Governor. It contains the doings of the board for the fiscal year and also that of the sanitary conventions held at Ann Arbor February 28 and March 1, 1882, and at Greenville, April 11 and 12, 1882. In these sanitary conventions an opportunity is given for gentlemen, and ladies also, to express their opinions on sanitary subjects. As a matter of course there is a good deal of chaff published, yet some good corn can be winnowed out. The State Board should take these papers, examine the facts they contain (if they have any) and, although their volume should thereby be made smaller, it would be the more readable. No business or professional man in active practice can have time to read and analyze so much verbiage; at the same time all would be interested in and would read a brief resumé. If size is any criterion the present volume is in advance of its predecessors. We cannot but give praise to the secretary for his indefatigability in editing the volume and in giving its readers such a full and complete index.

First Annual Report of the Provincial Board of Health of Ontario; being for the year 1882. Printed by order of the Legislative Assembly. Toronto: 1883.

We are under obligations to the honorable secretary of the board, Peter H. Bryce, M. A., M. D., for the copy of the above report. It is a very neat volume of 187 pages and well indexed, and shows that our Canadian brethren have become practically interested in the great science of hygiene. For some reason or other the most prominent page in the work is one headed "Errata." This has a bad effect on the reader, as it makes him uncertain of the sense of the contained matter and has a tendency to make him lay it aside without an attempt at reading.

A large share of the volume is taken up in reports of the doings of other boards of health in the States and sanitary conventions held in them.

The board have adopted a system of maps, which are distributed to the public, showing by diagrams the relative prevalence of any form of disease during a given time and in what part of the province it took place. The plan seems a good one.

We must congratulate the board for the progress they have already made, and extend to them our best wishes for the future.

Transactions of the Medical Association of Georgia. Thirty-third annual session. Augusta, Ga. Published by the Association. 1883.

A year ago we had the pleasure of saying that the Transactions of the Medical Association of Georgia

bore the palm in so far as their publication was concerned, and also that their contents compared favorably with those of other state medical associations or societies. The volume before us maintains the reputation of its predecessor in everything that makes up a book, contents included.

In looking over the names of members present and taking a part, not only in the medical politics of the society but also in the presenting and discussion of papers, we find many old friends whose names it would be invidious to mention.

Politically, Georgia has been named the Empire State of the South. We know no reason why she should not be so rated in a medical point of view.

In thirty-three years we are sorry to read such a long list of the medical men of Georgia who have gone to their long homes. May they rest happy for the good they did to their fellow citizens while residents on this terrestrial ball.

Dr. Campbell, the secretary, will please accept our thanks.

The Medical and Surgical History of the War of the Rebellion. Part III., Vol. II. Surgical History. Prepared under the direction of Joseph K. Barnes, Surgeon-General United States Army, by George A. Otis, Surgeon United States Army, and D. L. Huntingdon, Surgeon United States Army. First issue. From the Surgeon-General U. S. A. Brig.-Gen. Chas. H. Crane. 1883.
Washington: Government Printing Office.

This volume closes the surgical series of the Medical and Surgical History of the War of the Rebellion, and is a lasting monument to the memories of its distinguished progenitor, the late Surgeon-General Joseph K. Barnes, and its no less distinguished author, Surgeon George A. Otis, neither of whom lived to see its issue. The mantle of Surgeon Otis happily fell upon the shoulders of Surgeon Huntington, who scrupulously carried out the wishes and intentions of his predecessor.

This volume of 986 pages is fully illustrated with chromo-lithographs and lithographs, with a list of operators and reporters and a full subject matter index. It contains information that could not be obtained elsewhere, and as a work of reference on military surgery it cannot be said to have a competitor and cannot fail to meet the approval of the medical profession of the United States of America.

Report of Investigation of the Central Kentucky Lunatic Asylum. By the Board of Commissioners. 1883.

This report is virtually the trial of the superintendent of the asylum on charges affecting the management of the asylum. These charges were made by the newspapers, as stated by Commissioner Barnett, and from what we learn by reading, the trial was founded on the babblings of persons who were confined in the asylum for treatment, while insane.

The great trouble with newspapers is that they publish too much on hear-say evidence. They think that to be enterprising they must give the public some sensation, and it seems to matter them little at whose expense, whether of reputation or sensibility, it is written. This appears to be the case as developed in this report.

Dr. Gale demanded a full, fair and free investigation of all the charges made. He proposed to stand upon his executive and also upon his professional management, and boldly cited his traducers to the proof. There is much of similarity in this investigation as existed in the matter of the asylum at Kalamazoo, in this state, and with pretty much the same results. Gossipy charges originating with lunatics and newspaper reporters should be relegated to the waste basket, and the time spent in investigating them should be devoted to matters of more public importance.

Dr. Gale is a gentleman of too high a character even to be suspected of being cognizant of matters contained in the charges made against him.

United States of America War Department. Signal Service Notes, No. 1.

Report on the Michigan Forest Fires of 1881. Prepared under the direction of Brig. and Brevet Major-General W. B. Hazen, Chief Signal Officer of the Army. By William O. Bailey, Sergeant Signal Corps, U. S. Army. Published by authority of the Secretary of War, Washington, D. C.

This is a description of the forest fires which took place in Michigan in 1881, a history of the event and the causes, natural and local, which produced them. A map and diagrams are given of their origin and course and the extent of territory covered by the fire.

The Opium Habit. Its Successful Treatment by Avena Sativa.

A paper read before the New York State Medical Society, February 9, 1882, with additions giving a fuller description of its therapeutic action.

The Pathology and Morbid Anatomy of Tubercle. Report to the Wisconsin State Medical Society. By N. Senn, M. D., of Milwaukee, Wis.

Dr. Senn will be pleased to furnish any of our readers with a copy of the above reprint.

The Doctorate Address. Delivered at the Fortieth Annual Commencement Exercises of Rush Medical College, held in Central Music Hall, Chicago, February 20, 1883. By Moses Gunn, M. D., LL. D., Professor of Surgery and Clinical Surgery, Rush Medical College. Reprinted from Chicago Medical Journal and Examiner for April, 1883.

The Atlantic Monthly. Devoted to Literature, Science, Art and Politics. Vol 51, No. 301, for May, 1883, is on our table.

This is one of the standard magazines of our country, and the one, par excellence, of New England. It has no rival nor any progeny. It is the Atlantic Monthly and is published by Houghton, Mifflin & Co., Boston, Mass., at No. 11 East Seventeenth street. Yearly subscription, $4.00. Sample copies, 35 cents.

Science. Published weekly at Cambridge, Mass., by Moses King. Harvard Square. Vol. I. No. 7.

This is the name of a scientific journal published in Cambridge, Mass., and is to be devoted, as its name implies, to science. To all such who are so interested we cordially commend it. Terms $5.00 per annum. Please exchange and send back numbers.

Home Health, or the Popular Science of Hygiene.

A journal devoted to the advancement of practical knowledge of the laws of life, sanitation and all subjects pertaining to home health.

Romaine J. Curtiss, M. D., editor; Thomas M. McIlvaine, M. D., assistant editor and publisher. Vol. 1, No. 1. Office of publication, 204 South Jefferson street, Peoria, Ill. $2.00 per annum in advance. Single copies, 20 cents.

The editor tells us "that the design of his journal, Home Health, is to educate people in the knowledge of the prevention of disease." The effort is a worthy one and receives our best wishes. There is no reason why it cannot succeed. Please exchange.

A New Engraving. The origin of the Stars and Stripes, together with an accurate account of the Washington Genealogy. Prepared for the publishers by Edward W. Tuffley, of Northampton, England.

This plate is 21x28 inches and is received with the compliments of the New York Life Insurance Company, which we here add, as our personal opinion, is the best life insurance company in the United States.

Maryland Medical Journal.

Beginning with the first number of the tenth volume for May 3d, 1883, the Maryland Medical Journal was issued as a weekly publication and will appear every Thursday. Each number will contain sixteen pages double-column of solid reading matter. The size and appearance of the Journal will be slightly altered to conform to the requirements of a weekly.

Therapeutic Progress.

The Analysis of Quinine Pills.—Once more the quinine pills of the large manufacturing firms of this country have been made the subject of a searching chemical analysis. This time we regret to say it is the editor of a pharmaceutical journal who is concerned lest the dishonest practices of the manufacturers should go unwhipped of justice. With the editor's motives we have nothing to do. Probably he is actuated by a sincere regard for the highest interests of the profession he editorially represents. It is true that petty scandals in high life have for most readers a peculiarly delectable flavor, and the ferreting out of secret iniquity is considered evidence of a commendable spirit of enterprise in a journalist, and such enterprise is apt to be rewarded by increased circulation and popularity; but our brother Cowdrey is not a man with whom such considerations have any great weight. He doubtless thought he was doing the public an important service in having the present analysis made. At all events, he acted with the knowledge and consent of the parties most interested. "We are willing, with a big 'W'—but we want the analysis to be correct," was the response of one firm, and, with a single exception, all replied in the same strain.

While we believe that nothing but good can come of honest efforts, such as this, to maintain the highest standard of excellence in pharmaceutical products of this class, it is evident that much has yet to be learned before any scientific value can be attached to the results of analytical investigations surrounded by such peculiar difficulties.

The analysis, this time, is made by a man not ashamed nor afraid to sign his own name to this report, and the name is one which carries no little weight, since it is that of the accomplished and conscientious pharmacist, Prof. C. Lewis Diehl, of Louisville, Ky.

Although the editorial comments on the analysis in the Pharmacist and Chemist seem to intimate that the expected mare's nest has been discovered, we yet turn to the report of the distinguished analyst with the expectation of finding the results satisfactory and conclusive. The method of analysis in minutely described, and there is no question that the process adopted for extracting the alkaloid is an efficient one. We are prepared to accept the results in this particular as substantially correct, provided only the requisite skill in manipulation, and accuracy in calculating the results, be assumed as inseparable from the work of the distinguished pharmacist.

We have taken the pains, however, to examine these results critically, and we are driven to the conclusion that a large part of the work, including all the mathematical computations, were entrusted to an assistant, and the results accepted without personal verification. It is just possible that the calculations were made by the aid of a very defective table of logarithms, carried out to about four decimal places, but this hypothesis is less plausible than the first.

One important error in the outset vitiates all the calculations. The analyst states that to obtain the amount of officinal sulphate of quinine, containing eight (8) molecules of water of crystallization, he multiplies the weight of the anhydrous alkaloid by the factor 1.345. Now this factor, which should be 1.34568, gives not the officinal sulphate spoken of, but a salt containing seven molecules of water of crystallization. The correct factor, to give the officinal sulphate, is 1.373457, and this will yield results throughout about 2 per cent. higher than those published.

We are ourselves of the opinion that the U. S. P. standard is too low, but it is the standard the analyst has adopted, and his results are therefore from the the first hopelessly vitiated by the use of the factor actually employed.

Further, the results published are not consistent with the use of this factor, nor indeed one with another. We have gone over the calculation by which the total alkaloids are converted into crystallized sulphate, and we tabulate below our results as compared with Prof. Diehl's:

Number of samples.	Anhydrous alkaloid found (50 pills.)	Crystallized quinine sulphate Diehl.	Crystallized quinine sulphate by Diehl's factor.	Crystallized quinine sulphate with $7H_2O$.	Crystallized quinine sulphate, U. S. 1880, $8H_2O$.
	GRAINS.	GRAINS.	GRAINS.	GRAINS.	GRAINS.
1..	4.735	98.3	98.283	98.33	100.36
2..	4.700	97.5	97.556	97.61	99.62
3..	4.850	100.6	100.669	100.72	102.80
4..	4.640	96.3	96.310	96.36	98.35
5..	4.259	88.0	88.402	88.45	90.27
6..	4.615	96.8	95.792	95.84	97.82
7..	4.450	92.5	92.367	92.41	94.32
8..	4.900	101.9	101.706	101.76	103.86
9..	3.925	81.5	81.469	81.51	83.19
10—	4.635	96.1	96.207	96.26	98.15
—..	4.935	102.4	102.434	102.49	104.51

An inspection of these figures makes it evident that in only four out of eleven instances is the result reported correct, even to the first decimal place, Prof. Diehl's factor being employed in the calculation. In numbers five, six and eight, the errors are of considerable magnitude. In one case, indeed, the relative standing of two of the manufacturing houses (numbers 4 and 6) is reversed. That the printer is not responsible for these errors is proved by the fact the erroneous figures are themselves used as a basis for further calculations.

We cannot believe that Prof. Diehl thought so lightly of his responsibility in publishing results affecting seriously the reputation and interests of our best manufacturing firms, as to slight intentionally any portion of his work, but among the many pressing duties of his position, he must have placed undue confidence in the mathematical abilities of an assistant or student. The discrepancy between the results reported (col. II) and the figures of the last column, which are those the analyst professes to give, might be excused in the work or a novice, but they wholly destroy our confidence in any conclusions which might be drawn from the present analysis.

It may be stated just here that the analyst is consistent with himself in adopting as the factor for converting herapathite to crystalized sulphate of quinine the figure 0.7409, instead of 0.75615. The former will give a salt containing $7H^2O$, the latter is the

correct figure, if the standard of the U. S. P., 1880, is to be adopted.

But enough of blunders in the mathematical part of the work. There are evidences that a corresponding inaccuracy characterizes the manipulations of the analysis itself. If, for example, we examine the control analysis of pure sulphate of quinine (P. & W.), we shall see that the analyst obtains a larger proportion of alkaloid from the sample than it should contain, and that after dissolving this in ether its weight is still further increased. From 100 grains of quinine sulphate, containing 14.6 per cent. water of crystallization, he should have obtained 4.807 grains of anhydrous alkaloid. The quantity reported, 4.935 grains, exceeds this by more than 2.2 per cent., and after dissolving in ether, the weight is increased to 4.950 grains, nearly 3 per cent. more than the quinine ought to yield. Either the alkaloid was not completely dried, or the ether contained some non-volatile matter. A chemist ordinarily, reaching such a result in a control analysis, would reject it at once, and ascertain, before going further, the cause of his failure.

The analyst does not go on and calculate, as in the case of the pills, the percentage of quinine contained in this alkaloid; if he had made the calculation he would have demonstrated (?) the fact that Powers & Weightman's quinine contains less than 94 per cent. of true quinine salt. Carrying the calculation further, precisely as in the case of the pills, he would have shown also that the quinine contains sulphates of foreign alkaloids, freely soluble in ether, 6.7 per cent., while of the salts of insoluble alkaloids it contains 0.31 per cent., total foreign sulphate 6.39 per cent. The presence of a minus quantity of cinchonine sulphate is obviously a strong recommendation of this brand of quinine. It is a pity that the manufacturers have not learned until now these curious properties of American quinine.

Enough has been said to show that the accuracy of the present analysis is no more to be depended upon than that of former ones.

An ambitious attempt has been made by the present analyst to estimate not only the total alkaloid in the pills, but also the exact amount of quinine. We will not attempt any detailed criticism of the method adopted in this part of the analysis. We think it may be safely judged by the results reached. Those who have had the most experience in assays of the cinchona alkaloids shrink from a task of such difficulty as that proposed. They are content to judge of the purity of the alkaloid, by applying some of the well-known approximate tests, such as that of Kerner or Hesse, and unless this test reveals an excessive amount of impurity, to accept it as genuine quinine. That the purest quinine procurable contains upwards of six per cent. of foreign alkaloids, and that that employed by reputable manufacturers contains from 12 to 30 per cent., we cannot regard as demonstrated, and we prefer to accept the verdict which has been unanimously rendered by those who have recently examined this matter, viz.: That the quinine employed by all of the manufacturers of repute is commercially pure. That none but the purest obtainable quinine is used by some, at least, of the manufacturers named, we positively know to be the fact.

On the whole, the present analysis, if it shows anything, shows that the pills of the principal manufacturers, as a rule, contain within five per cent. of the amount of quinine their labels claim; in seven out of the ten samples examined, the average, adopting the U. S. P. Standard, was 100.14 per cent. of the amount claimed, and even on the lower standard, that generally adopted by the manufacturers themselves, it is 98.12 per cent. The extreme variation from either standard in these seven samples is less than four per cent. No correction has been made in these figures for the variation above or below the average of the particular pills analyzed. If such correction was made, it would still further reduce the range of average variation from the standard.

These results, in fact, may be considered a triumph for the manufacturers. Among the exceptions there is one, at least, which may be claimed as tending to prove the rule. In a former recent analysis the product of a certain manufacturer were found to be actually five per cent. over weight. That a second sample from the same manufacturer should prove to be ten per cent. short in weight, is no more than poetic justice; the one fact may be held to be the natural correlative of the other. It seems to us, however, in view of all the circumstances, that it is quite as likely in this instance that the careless dealing was on the part of the analysts as on that of the manufacturer. Analytical experimenters have shown themselves thus far quite as liable to error as the manufacturing pharmacists. Indeed, it should be expected that they would be more so, since the manipulations of the latter reduce themselves to set rules and routine, while those of the former must be adapted intelligently to the varying conditions of each case.—*Weekly Drug News and American Pharmacist*, April 28, 1883.

Professor Diehl's Quinine Pills Analyses.—Prof. C. Lewis Diehl has furnished an interesting contribution to the literature of quinine pills analyses in his recent investigations of the leading brands of two-grain pills on the American market. It is not our purpose to follow the processes of Prof. Diehl in detail, but merely to supply our readers with an intelligent outline. In each instance 10 pills representing 20 grains of crystallized sulphate of quinine were operated upon.

[The Druggist here gives an outline of the process which we shall not reproduce, contenting ourselves with a reproduction of the tabulated results. ED. GAZETTE.]

The weight in each case being for 50 pills unless otherwise specified:

Number of sample.	NAME OF MANUFACTURER.	Total alkaloids found, calculated as crystallized sulphate of quinine.	Total foreign alkaloids found, calculated as sulphates.	Pure crystallized sulphate of quinine contained.	Deficiency of total alkaloid calculated on the basis of quinine.	Excess of total alkaloid, calculated on the basis of quinine.	Deficiency of cryst. sulph. quinine in each 2-grain pill.
8	McKesson & Robbins.....	101.9	30.3	71.6	....	1.9	0.568
3	Hance Bros. & White.....	100.6	12.0	88.6	....	0.6	0.228
1	Bullock & Crenshaw.....	98.3	12.2	86.1	1.7	....	0.278
2	Keasby & Mattison.....	97.5	15.8	81.7	2.5	....	0.366
6	Henry Thayer & Co.....	96.8	19.4	77.4	3.2	....	0.452
4	Parke, Davis & Co.....	96.3	15.5	80.8	3.7	....	0.384
10	W. H. Schieffelin & Co..	96.1	15.2	80.9	3.9	....	0.382
7	W. R. Warner & Co.....	92.5	15.2	77.3	7.5	....	0.454
5	John Wyeth & Bro.....	88.9	13.3	75.6	11.1	....	0.488
9	Tilden & Co.....	81.5	34.5	47.0	18.5	....	1.060
100 gr. P. & W sul. quinine.		102.4	....	96.0	....	.....	0.08

The reputation of Prof. Diehl warrants the conclusion that he has carried out his task honestly, conscientiously, and without bias. His article shows much painstaking care in his difficult analyses as he progressed step by step, and although his method is not in accordance with those published more recently, it is capable, in experienced hands, of yielding tolerably reliable results.

The results of the analyses are given for what they are worth, their intrinsic value being at this time a matter of considerable conjecture. One thing, however, may be safely said in behalf of the manufacturers of these quinine pills; the majority evidently intend to employ full weight of the alkaloid, since the deficiency of less than five per cent. of total alkaloids found, can be accounted for on some other theory than that of intentional omission. The question as to the purity of commercial sulphate of quinine employed is another thing, and it can only be said that, while thus far no really satisfactory method is known to chemists for the certain separation of the cinchona alkaloids, our manufacturers strenuously put forth the claim that none but the very purest sulphate of quinine obtainable ever enters into their pills, but that this avowedly invariably contains upward of six per cent. of foreign alkaloids. The attempt to determine the weight of absolute quinine is certainly a most delicate undertaking, one from which other experienced chemists are disposed to shrink, content with such approximate tests as are known as Hesse's or Kerner's, and any sample of quinine tested by such a standard will be passed by manufacturers as pure unless the impurities should appear unreasonably great in proportion. Thus far there appears to be little in the showing of the analysis, assuming it to be correct, that is absolutely detrimental to the reputation of but one of the houses in question, although several others seem to be placed dangerously near the fatal line.

While the methods employed by Prof. Diehl are perhaps above serious criticism, our attention is called to certain mathematical errors which will tend to destroy confidence even in the approximate accuracy of the results. The analyst states that, to obtain the amount of officinal sulphate of quinine, containing (8) eight molecules of water of crystallization, he multiplies the weight of the anhydrous alkaloid by the factor 1.345. Now this factor, which should be 1.34568, gives not the officinal sulphate spoken of, but a salt containing seven molecules of water of crystallization. The correct factor to give the officinal sulphate is 1.373457, and this will yield results throughout about two per cent. higher than those published. A careful computation, moreover, reveals the fact that the results obtained fail to accord with the use even of the factor said to have been employed. The work is further conspicuously at fault in its manipulations as indicated by the inconsistencies developed in the control analysis. These and other evident miscalculations and omissions lead to the conclusion that Prof. Diehl's verdict is by no means final as to the guilt or innocence of the manufacturers. The Medical News' analysis recently published in these columns, when compared with that above tabulated, presents results wholly different; the first in the former dwindles almost to the last in the latter. We have information of two other analyses recently made by competent chemists, both differing widely from each other, and from those already published. This conflicting testimony is greatly to be regretted. The honest manufacturers are clearly entitled to a full vindication of their integrity, and to exemption from further charges and suspicions affecting the value of their goods; the short-weight men, on the other hand, are entitled to no sympathy or confidence, and their products merit universal ostracism. The line of demarkation remains yet to be drawn. When chemists disagree, who shall decide, is a question pertinent to the occasion.—*The Druggist*, May, 1883.

Analyses of Quinine Pills.—The manufacturers of quinine pills, who comprise many of the leading manufacturing chemists and drug jobbing houses, have again been attacked through an analysis of their preparations which claims to discover in nearly all of them a considerable deficiency of the ingredient of first importance. About three months ago a Philadelphia medical journal sought notoriety by the publication of an alleged analysis, showing serious deficiencies in the amount of quinine in pills, claiming a definite quantity of that alkaloid. The author of the analysis has never been made known, and his method has been pretty thoroughly dissected by chemists, wholly disinterested, except from a scientific standpoint, as well as by those whose integrity the analysis called into question. In the present case the author of the analysis is Prof. C. Lewis Diehl, a Louisville pharmacist, who is well known as a careful student of pharmaceutical chemistry. His name lends weight to what would otherwise appear to be solely a bit of sensational journalism on the part of a Chicago monthly. Without questioning the motives which have led to the making and publication of these analyses, their trustworthiness may reasonably be denied, when the results of Professor Diehl's work confirm in no single respect, so far as we can see, those of his Philadelphia contemporary, excepting that they both find the pills to fall short of what is claimed for them by the manfacturers. Any chemist who has had experience in the analysis of cinchona barks or of preparations containing their alkaloids, knows how difficult is the correct determination of the several salts and their percentages, and he will hesitate to put his name to an analysis with the claim of its strict accuracy. "Fools rush in where angels fear to tread," and we are not unaccustomed to analyses published in the same confident way that the work of the Philadelphia unknown and Professor Diehl have been given to the public, even though they give results which reflect most unfavorably upon houses of long tried business reputation and undisputed commercial integrity. It would seem to most laymen, that when a chemist found in the result of his investigations an absolute contradiction of the claims of houses of this class concerning their own preparations, he would suspect the accurary of his own work. The integrity of the leading manufacturing chemists of the United States should not be called into question by anything short of the most searching investigations, the results of which are proven by repeated tests, carried on by most expert analysts. This is a proposition intended to reflect in no way upon men like Professor Diehl, who must incognize that analytical chemistry in the hands of anybody but a thorough expert, is quite as likely to err as commercial integrity. The responsibility of the publication of such work rests upon publishers who seem to us, under the most charitable view of their action, to allow their zeal in behalf of one portion of the community to lead them into the perpetration of outrageous injustices upon another and not less deserving portion.—*Oil, Paint and Drug Reporter*, April 25, 1883.

The Analysis of Quinine Pills.—The recent publication by the Medical News of an analysis of the quinine pills of the market, without the signature of the chemist responsible for the analysis, and the evident defects and errors inherent in the published figures, elicited such a protest from the manufacturers, that our esteemed contemporary, the Chicago Pharmacist, undertook to have a fresh analysis made, by a chemist of repute, whose name should be published with the results, in order to give a final and reliable report. The manufacturers were asked whether they consented to this, and favorable replies were received from all but one; but some of the replies attached certain conditions, as, for instance, that the analysis should be made in presence of the chemist representing the house. These conditions appear to have been ignored, but the editor of the Pharmacist offers to have the analysis repeated, on the remaining half of the samples, in presence of a representative from each house.

The chemist selected by the editor of the Pharmacist was Prof. C. Lewis Diehl, of Louisville, and the report of the latter is published in the April number of the Pharmacist. The editor prefaces the report by an introduction in which he states that Prof. Diehl urgently requested that the names of the firms

be withheld from publication, on account of the endless controversy any analysis, however true and perfect it is, will cause. The editor remarks that he would have done so, were it consistent with his promise, but he could not do so. We regret exceedingly that he should have disregarded Prof. Diehl's request, because, in our humble opinion, the published analysis does not settle the question at all. We have every confidence in the ability and conscientiousness of Prof. Diehl, but we have some personal experience with quinine-assay, and have very strong doubts whether all the steps of the process, as detailed in Prof. Diehl's report, will be proof against criticism. We doubt very much whether the six most competent quinine-analysts of the world would have obtained identical results in following the process; and, what is more, we doubt whether they would have obtained identical results in following, each, the process he considers the most accurate. For it is one thing to determine the amount of total alkaloids in bark or in a mixture, or the amount of ether-soluble alkaloid, or even the amount of quinine the manufacturer will be able to obtain from a bark; but it is an altogether different thing to separate quinine from a mixture, and to be able to say: "1st, this is quinine and nothing else; 2d, the other portion is not quinine, and does not contain any; 3d, the proportion of the quinine I find by analysis in the total alkaloids is the same as was present in the original quinine employed by the manufacturer." Unless these three fundamental questions are fully and positively answered by the analysis, we hold it to be of no value.

It is our conviction that the action of the Pharmacist and the report of Prof. Diehl will form the starting-point for a fresh and exhaustive study of this most difficult part of organic quantitative analysis, and will result in furnishing us methods of separation and assay that may be thoroughly reliable.—*New Remedies*, May, 1883.

Analysis of Quinine Pills.—Our enterprising contemporary, The Pharmacist and Chemist, of Chicago, has supplemented the investigations of The Medical News into the composition of quinine pills, by a series of analyses by Mr. C. Lewis Diehl, of Louisville, one of the most distinguished pharmaceutical chemists in the country, and in its issue for the current month it gives the results with the names of the manufacturers, and the shortage found in the product of each.

The samples of two-grain quinine pills were purchased in unbroken packages in Chicago, in January last, and hence were manufactured probably before December 16th, when the results obtained by our Commission were published. The method of analysis pursued by Mr. Diehl was practically the same as was used by The News Commission, but the results in each case gave a greater deficiency of quinine than was found in our samples, and they also showed the existence of foreign alkaloids, none of which, according to the official tests of the United States Pharmacopœia, were found by our Commission.

[Here follow the results as will be found reproduced elsewhere in this number. ED. GAZ.]

The importance of the results of these analyses of The Medical News, and of The Pharmacist and Chemist, can scarcely be overestimated, and they show that if the leading manufacturing pharmacists desire to retain the confidence of the profession and of the public, they must revise their working formulæ, and by constant analysis, by competent chemists, of their finished products, be able to guarantee the accuracy of the composition of the preparations which are issued from their establishments.—*Medical News*, April 28, 1883.

Observations on the Use of Hypophosphites in the Treatment of Phthisis Pulmonalis.*—I would preface the few remarks which I am about to make on the use of the above-named remedies in the treatment of pulmonary consumption, by stating that I have no intention of putting them forward as specifics for the cure of phthisis. I find that an experience of 17 years among the patients of a hospital specially devoted to the treatment of diseases of the chest gives very little encouragement to a belief in a specific cure for consumption, though I willingly admit that one does learn something of the special sphere and power of action of certain drugs as agents of more or less value in the treatment of pulmonary disease in its various forms and stages. What I claim for certain of the hypophosphite salts is, that they are worthy of a place high in the list of our medicines for consumption. My own experience, dating from 1863, would lead me now to say that I know of no remedies so generally applicable and beneficial in the treatment of phthisis as are the hypophosphites.

I had in my mind the idea that true tuberculosis, in the form of grey miliary tubercle, was a disease in which the nervous system was much concerned. My reason for this opinion was that the disease is apt to come on in an acute form in cases where there has been great nervous strain or exhaustion.

Two of the most hopeless and rapidly fatal cases of this acute tuberculosis that I have met with came on in the cases of two young ladies, not relatives, each of whom had been working very hard for a competitive examination, and so had undergone much exhaustion of nerve-force.

The affinity, too, of miliary tubercle for affecting the nervous system is much; for, in many cases, miliary tuberculosis manifests itself only in the form of a basilar meningitis. Considering these points, I thought phosphorus and hypophosphites might be valuable in restoring the exhausted nerve-force.

Against these ideas of mine as to the nervous origin of miliary tubercle, we have to place the observations of Buhl and others, who regard miliary tuberculosis as an infective disease, produced by autoinoculation from caseous matter in the body. I do not, however, give my implicit adhesion to this statement, if it be held to mean that we never get miliary tuberculosis unless some caseous deposit, or other infecting centre, be present somewhere in the body. In proof of this statement, I would take the case of one of the young ladies just referred to. She fell ill May 14th, and died on June 1st; and a careful post mortem examination by Dr. Peacock showed both lungs airless and filled with small miliary tubercles, none of which had undergone any softening process. We do not hear of any caseation or softening, while the history tells of much nervous strain and exhaustion as the cause of the disease. To go further into the nervous origin of miliary tuberculosis will lead me away from the more practical object of my paper; I will therefore now endeavor to show in what form of phthisis I have found hypophosphites useful medicines.

I will give, first, examples of the effect of hypophosphite salts in cases of strumous or scrofulous pneumonia. It is well known how, in a scrofulous subject, a pneumonia is very protracted. The infiltration of lung subsides very slowly, or it may remain stationary, and undergo retrogressive metamorphosis of a cheesy character. A scrofulous catarrh persists, with abundant cell-formation, and a cellular infiltration penetrates deeply into the sub-mucous tissue of the lung; thus the wall of the air-cell is destroyed, and a true phthisis pulmonalis, or lung-consumption, is established. Secondary to this, we may have miliary tubercle, the seat of which formation is the subepithelial connective tissue, and also the lymphatics of the lung.

Illustrations of this kind of lung-disease are very common among badly fed children who come to the

*Read before the North London District Metropolitan Counties Branch.

hospitals, and also the same kind of disorder is by no means unknown among the better classes. A child passes through an attack of measles, and gets a cough and pulmonary congestion that do not pass away. Cod-liver oil, iron, and sea-air may, after a while, effect a cure; but I have never seen such good results from the two first named remedies as I have seen follow the administration of hypophosphite of soda and hypophosphite of lime.

This is the sort of case to illustrate what I have just said. Miss Eva H. was seen by me April 1, 1874. She was then convalescent from an attack of measles, but an obstinate cough remained, with some feverishness. There was dullness with tubular breathing at the upper part of the left lung, and the note in my book says, "pneumonic deposit at left apex." Nitric acid was taken for ten days, and then, as the physical condition of the lung was in no way changed, two grains of hypophosphite of lime with glycerine and water were given, and the child went to Eastbourne.

June 5th. I found her better, and the pulmonary condition on the left side improved, but she was still feverish and still had a cough, while I found some impaired resonance at the base of the right lung, with a slight crepitant râle. Hypophosphite of soda was given in two-grain doses, and in a couple of months the signs at the right base were gone and the dullness at the upper left chest had diminished notably. This little girl went on well till she got scarlatina in February, 1880, and on the 21st of that month I was asked to see her with Mr. Kingston Barton. When I saw her, the rash of the fever was subsiding, but she had a temperature of 104°, pulse 14, respiration 48. Much crepitation was now heard over the apex of the left lung, as if old mischief had been set going again by the fever. She had slight albuminuria, and casts of blood-corpuscles were seen in the urinary sediment. The only remedy that the stomach would retain was three or four drops of nepenthe at bedtime. Quinine, digitalis, and belladonna, were tried and failed. On July 28th we began two grains of hypophosphite of lime in glycerine and water, and it kept down well. On Tuesday, March 2d, after being at the point of death, with a temperature of 104°, for about four days, a crisis took place. Temperature fell to 101°, pulse 115; there was still much crepitation in the upper left lung; respiration on the right side was loud and puerile. Hypophosphite of lime was continued till the end of March, and then the cough had ceased. The left upper chest was somewhat fallen in, the breath-sound was tubular, almost free from crepitant sounds, and the patient has done well ever since. A marked pulsation of the left auricle could be seen in the chest, due to some contraction of upper left lung.

A favorable result, therefore, in this case was associated with the continuous administration of two grains of hypophosphite of lime, after the unmistakable failure of other approved remedies.

The case of Timothy S., in Victoria Park Hospital, is another one to illustrate the good effect of hypophosphite of lime. The patient was 10 years old, and his illness began with a troublesome cough. On April 23, 1874, he had dullness at the left base, with crepitant râles. He took daily three grains of hypophosphite of lime, and by July 30th had gained flesh and lost all his morbid pulmonary sounds.

The case of William P., one of the first I treated with hypophosphite of lime, impressed me much. William P. came to Victoria Park Hospital, December 14, 1863, with severe cough, much expectoration, much loss of flesh, and bad diarrhœa. He had been ill three years, and had taken much cod-liver oil. I ordered him five grains of hypophosphite of lime, one fluidounce of decoction of cinchona, and two drachms of cod-liver oil three times daily.

January 11, 1864. He felt much better. Pulse 96. Expectoration was very much less. Diarrhœa had ceased. Cavernous sounds and large crepitation were heard at the upper part of the left lung. He was ordered 15 minims of tincture of iron three times daily. In a week he returned worse in every respect; the diarrhœa was as bad as ever. The hypophosphite of lime was resumed, and on it he again improved very markedly.

The case of Minnie S., who has just left the hospital, deserves a word of notice. The girl comes of a consumptive family, and has always had some cough. After an attack of measles, she was laid up with severe cough and congestion of left lung. Fourteen days afterwards, on November 14, 1880, she came into Victoria Park Hospital with much cough and expectoration, and a temperature of 102°. The left lung was dull, and full of crepitant râles in its upper part. She took regularly three grains of the hypophosphite of lime for six weeks, and lately she has been taking some of Burrough's iron and beef wine. She has gained about ten pounds in weight, and, though the dulless at the upper left lung is not gone, yet the crepitant râles are scanty, her cough causes her hardly any trouble, her pulse is quiet, and she can run about like a child in perfect health.

I should have liked to be able to give you a few more cases to show how well the hypophosphites answer in curing caseous and scrofulous pneumonia of the apex of the left lung. Croupous ordinary pneumonia of the base I believe very rarely to lead to phthisis, but catarrhal pneumonia of the apex is very apt indeed, especially in young scrofulous persons, to lead to destruction of lung-substance; and it is in these cases, where cell-products accumulate in the alveoli and bronchioles that both phosphorus and hypophosphites are unsurpassed in curative action by any remedy with which I am, as yet, acquainted. Nor am I singular in this belief; my friend and colleague at Victoria Park Hospital, Dr. Eustace Smith, has said to me, and has said also in his Clinical Studies on the Diseases of Children, pp. 178, 289, that, when softening in a deposit has begun, the effect of hypophosphite of lime is often very remarkable; and again, page 289, speaking of pneumonic phthisis, Dr. Smith says: "The effect of the hypophosphites seems at times almost magical; but in true grey tuberculosis they, in common with quinine, digitalis, and other remedies, are of small avail."

Thus I have briefly endeavored to show the indications for the employment of the hypophosphites in phthisis pulmonalis. Most useful medicines I have found them; never have I seen any injurious effect follow their administration, and all I would say in conclusion to anyone who is disposed to try these salts is: Examine well the patient and see if he have any hepatic or renal disease complicating his lung-affection, and then test your hypophosphite to see if it ignites readily when heated. Lastly, give the salt in as simple a form as possible. A little bicarbonate of soda may be added to the soda salt, and some liquor calcis saccharatus to the lime salt; and then let simple water, or syrup and water, form the vehicle for admistration.—John C. Thorowgood, M. D., F. R. C. P., in *British Medical Journal*, July, 1882.

Whooping-Cough, Its Pathology and Treatment.*—Mr. Dolan prefaced his paper by saying it was easy to frame a definition of whooping-cough, but a recapitulation of symptoms was not an explanation. He would endeavor to throw what light he could on its true pathogenesis. He could not dwell upon all the theories advanced, but he would devote a little attention to the views of Dr. Gueneau de Mussy, in order to make them the basis for his objections against a large number of theories.

The theory of M. Gueneau de Mussy that the malady was a bronchial adenopathy, characterized by enlargement of tracheo-bronchial glands with compression of the pneumogastric, did not appear to him to account for the phenomena of pertussis. He shared in the objections raised by M. Colin, Hardy.

*Abstract of the Fothergillian Gold Medal Prize Essay, read before the Medical Society of London, October 16, 1882.

Bolt, Woillez, in the discussion at the Academy of Medicine, Paris, and by Drs Barlow and Burney Yeo at the Pathological Society of London.

The tracheo-bronchial glandular enlargement was not always present in pertussis, and when, from various causes apart from pertussis, these glands have been enlarged, the pertussoid cough has been absent during life.

The contagious character of whooping-cough could not be explained by any theory of location in the nerve centres. Looking at all the phenomena and the symptoms, whooping-cough presented certain resemblances to those diseases, the causes of which were now believed to be minute organisms or fungi. It was highly contagious; it had its period of incubation; of efervescence and defervesence; it ran a regular course; it rarely occurred but once in the same individual.

On the grounds of anology, then, and some ascertained facts, he would place pertussis in the group of diseases caused by protophytic fungi. Linnæus foreshadowed modern views when he endeavored to prove that almost all diseases were produced by animalculæ, or had an insect origin. The insect of Linnæus was the microbe of Pasteur: two great minds thus met at the same conclusion.

Other observers, such as Poulet, Letzerich, and Binz suggested the fungoid nature of pertussis. So far back as 1867 M. Poulet found in the sputa of pertussoid patients what were then termed Infusoria, belonging to the class bacterium—bacillus.

Letzerich had produced whooping-cough in rabbits by inoculating the trachea with sputa from the human subject. Repeating experiments like those of Letzerich on rabbits, he found that the blood did not produce any effects, but that the sputa and other secretions caused death. Microscopic examination of sputa revealed ordinary bacteroid forms, but in addition, he had observed a microbe to his eye, somewhat resembling the spirochæte plicatilis of Cohn. He had been assured that this microbe was a delusion, and could be accounted for by the personal equation which must always be allowed for in microscopic work, viz., the desire of the observer to see in the field of the microscope what he wished to see.

Since this essay was written Koch had discovered the tubercle bacillus. Improved methods of staining, such as those of Henneage-Gibbes, and others, more readily exposed these minute organisms. By the application of similar methods he believed that the special microbe of pertussis would be revealed. Admitting the fungoid nature of pertussis, the contagious nature of the malady was easily explained. The nasal secretion and sputa confined this. Germs were thrown off into the air. These germs entered by some of the channels by which other contagia entered. They developed in the blood, setting up constitutional disturbance, subsequently attacking the pulmonary epithelium, giving rise to all the phenomena of pertussis. From the lungs the contagion was again thrown off.

In pure, uncomplicated whooping-cough the scalpel of the most practised anatomist failed to detect any characteristic or pathognomonic lesion. This was not surprising, and lent support to his hypothesis. The simple disease whooping-cough was rarely fatal; the complications killed, and were numerous. He had, as far as possible, in his essay examined the pathological state of the usual complications. Time would not allow him to dwell upon them.

It was believed that the urine was very frequently saccharine. He had examined the urine of 50 children with confirmed whooping-cough and only found traces of sugar in 13.

This theory harmonized with some of the methods of treatment advanced and rendered them intelligible. The key-note on treatment had been struck by Sir Thomas Watson. Before considering treatment he would devote some time to the question of prevention. There had been no systematic attempt made to limit, check, or stamp out whooping-cough. If it were possible on the same day to isolate all the children suffering from this disease in England, and to keep them in quarantine for a lengthened period, whooping-cough might be stamped out. This he knew was impracticable. We might, however, do much to check and limit it. Without the assistance of the public we were powerless. Contagium was what we had to contend with in whooping-cough. The public should be instructed in the general principles of prevention—these he sketched. Whooping-cough, like all the other zomotic diseases, taught us one lesson—the dependence of one class upon another. If we threw a stone into a pond a very well-known phenomenon occurred. The water was disturbed; very soon circles might be seen radiating from the disturbed centre; those increased, grew wider and wider, until they were ultimately lost to the perception of the eye; each circle bore a geometrical relation to the preceding circle; all owed their origin to the primary point at which the stone sank out of sight. When whooping-cough or any other infectious disease occurred, from this tainted centre waves or circles might incease, grow wider and wider, but different from the mimic circle on the pond, carried with them disease, misery, and death. Those waves did not respect old or young, rich or poor, the prince or the peasant. They all bore a relation to the primary case, so that each class had an interest in confining the operation of the primary disturbance. If each one discharged his individual responsibility there would be no excessive individual sacrifice; if each one considered his neighbor, how easy it would be to check infectious disease. It all followed in a consecutive chain of duty and self-interest. By the isolation of the first case of whooping-cough in any house or street, by the observance of the general directions given, a limit would be put to the spread of the disease. One family would suffer a little self-denial and it would involve a little self-sacrifice, but the general gain to the community would be great indeed.

Approaching the subject of treatment proper, he stated that the scientific physician did not pretend to cure (in the sense in which it is commonly understood) scarlatina, measles, typhoid fever, or small-pox; but, like the helmsman at the helm of a ship, he strove to guide their course, to pilot his patients safe to land—to recovery, avoiding the reefs and rocks, or otherwise, the complications which might arise. Great skill was required in this process, even though all the above diseases ran naturally toward recovery. Whooping-cough, like measles and scarlatina, would run its course. We had no power over its incubation or its development, but we had great power over its issue. As he had previously pointed out, we could by a modified form of isolation and quarantine prevent the spread of infection. By improved hygienic arrangements we could place the patient in the most favorable circumstances towards recovery; we could relieve certain painful and prominent sources of trouble; we could guard against complications; in a word, by the employment of rational measures we could assist Nature in her efforts to throw off the disease, and this was the highest power we possessed in dealing with the majority of diseases of this class. He described a plan of treatment and gave a copious formulary. In all plans of treatment certain codifications must be made, depending on the occurrence of exceptional phenomena. Every plan of treatment must be modified to suit the age, constitution, and the environment of the patient. Thus, for instance, we could not pretend to treat a delicate, strumous infant with whooping-cough in the same way as we would treat a robust, strong and healthy infant; nor would we use the same measures for an infant that we should employ for a child of two or four years of age. An empiric might make a fortune by announcing that he had a cure for pertussis even at the present day; and if he were to make up a mixture of bromide of potassium, or ammonium, and advertise it with the same spirit of enteprise with which

Holloway and Eno have pushed their pills and fruit salt, the same rich reward would almost certainly follow.

Treating the subject from a scientific standpoint, and apart from empiricism, he was forced to agree with Dr. Dickinson and those older physicians, who taught that there was no specific, and that we must be content with guiding the disease through its course. How we may do so he had endeavored to show, and still more, as prevention was better than cure, laid down directions on prophylaxis, which if adopted, would deprive us of the necessity of having to attempt to cure it.

The latest development of the genius of Pasteur had found issue in arresting splenic fever and fowl cholera by inoculation with the attenuated virus of the microbes upon which those diseases depended, so that he might not unreasonably hope that, as whooping-cough was a bacteroid disease, we might be able by his method to add a more powerful weapon to our preventive measures, and that by inoculation with the attenuated virus of pertussis we might render infants insusceptible to the contagion.

Jenner conferred a boon on humanity by the introduction of vaccination. Following in the footsteps of the illustrious Englishman, Pasteur promised to be equally a benefactor to his race.

But was not this a sad confession to make, that we have to depend upon prophylaxis—that we had no specific? He did not think so. We could control and direct the disease, just as we controlled typhoid, scarlatina, variola. We had no specifics for them.

His views were, he believed, in harmony with the temper of medicine in modern times. It was not derogatory to true progress to recognize the Hippocratic, *vis medicatrix naturæ*. It was something to be able to estimate the physiological disturbance going on in virus diseases—the heat, waste, increase of heart or lung action, the altered functions of secretion and excretion; to have the power of directing or controlling physiological action, though we could not arrest or neutralize the specific organisms which are at work. It was something to know the nature of the organisms we had to deal with; it was something to feel proud of that, by the aid of sanitary science, we could prevent such diseases, though they depended upon entities which cannot be cast out after the incubatory stage.

The true pathogenesis of pertussis might not have been pointed out, yet if his views were adopted they afforded a wide sphere for activity. We could relieve certain symptoms as they arose; we could alleviate, we could palliate, and we could prevent. To counteract the causes of disease was the highest triumph of our art.

There was a true and false medicine—the true consisted in knowing how much we knew; the false in pretending that all the arcana of disease and Nature were open to us. The true was noble and honest; the false was ignoble and dishonest.

In the interest of the true it was better to unhesitatingly declare that there was no specific for pertussis, and to show the reason why. This he had endeavored to do. In the interests of little patients he should have been pleased, had facts allowed him, to write that there was a panacea for pertussis and when the specific was found he should hail its advent with joy, and gladly put it to the proof. It would be a pleasure, in this case, to be convinced of holding erroneous views.

Meantime, waiting for the panacea, he submitted his own method of treatment to the consideration of the profession, and, in the words of Horace, said:—

" . . . Si quid novisti rectius istis
Candidus imperti; si non his utere mecum."

—Thomas M. Dolan, F. R. C. S., L. R. C. P. Ed., in *Med. Press and Circular*, Oct. 25, 1882.

Gelseminum in Tetanus.—Referring to Dr. J. B. Read's paper as to the use of the liquid extract of Gelseminum sempervirens in the treatment of tetanus I would make the following remarks: During the sessions of 1873–74 I communicated to the Liverpool Medical Institution a paper on the physiological action of that drug, and as the result of many observations and experiments, came to the conclusion "that the principal effects produced by large doses are extreme muscular relaxation without either stupor or delirium. In these respects," continues the paper, which was published in April, 1875, "its action seems somewhat akin to that of conium maculatum, and these effects would seem to point to its probable utility in tetanus and other disorders attended with severe muscular spasms."

During the following session, Dr. Spratly, of Rock Ferry, honorary surgeon to the Birkenhead Borough Hospital, communicated to the Liverpool Medical Institution a report of several (I think three) cases of traumaic tetanus, which he successfully treated by means of gelseminum in the manner indicated by Dr. Read, the doses of the drug being very large, and the effect in each case eminently satisfactory. One of these cases, which, by Dr. Spratly's courtesy, I had an opportunity of seeing, was very severe.—William Carter, M. D., in *British Medical Journal*, Jan. 6, 1883.

Prophylactic Influence of Tincture of Iron on Contagious Diseases.—A somewhat singular, and if substantiated, very valuable observation has been made by Dr. W. Duff Green, of Mt. Vernon, Ill., in the St. Louis Courier of Medicine, February, 1883. He relates his experience in six families, wherein he treated typhoid fever or measles. In every individual to whom he had given tincture of the chloride of iron, if the disease appeared at all it was very slight, while the majority of those so treated escaped it altogether; at the same time nearly all those who did not take the iron had the disease in its ordinary severe form. He has noticed this prophylactic action since 1877, and he only records a few of his many observations. It may be that the iron simply enables the system to withstand the onset of the disease, by giving it tone, without possessing any specific action; but whatever the explanation is, this report is sufficiently valuable and trustworthy to stimulate further investigation.—*Med. and Surg. Reporter*, Feb. 17, 1883.

New Remedies.

Some New Remedies.—*Tonga—Stigmata of Maize.*—About a year ago the drug firm of Parke, Davis & Co., of Detroit, Mich., sent samples of various new remedies to the Surgeon General, who turned them over to the Naval Dispensary of this city, and requested that they might be given a trial, and reported upon.

During the short time I was attached to the Dispensary as assistant to Surgeon A. A. Hoehling, I availed myself of every opportunity to test the value of these new drugs. Whenever any of them was administered, the fact was noted; and I always endeavored to see the case afterwards to learn how the medicine had acted. A number of the cases to be given occurred in the practice of Dr. Hoehling, and I have his consent to bring them before the society in connection with my own.

Tonga.—The first drug which will claim your attention is tonga. This remedy was introduced to the profession by Drs. Ringer and Murrell, it having been placed in their hands by a Mr. Ryder, a gentleman residing in the Fiji Islands. The account which the latter gives of it is as follows:

"It has been used for several centuries by the aborigines of the Fiji Islands. A European, who married the daughter of a chief, learned the secret from his father-in-law, in whose family the knowledge of the composition of this remedy had been an heirloom for upwards of two hundred years."

This European gave the drug to Mr. Ryder, who requested Drs. Ringer and Murrell to test its virtues. The remedy is said to consist of parts of at least two plants, whose botanical relations are not known. The parts of the plants are broken up into a coarse powder, and then wrapped up in a cover of the inner bark of the cocoanut tree. In the New York Medical Record of September 11, 1880, I find a paragraph which states that tonga, as it appears in the market, consists of small broken fragments of the woody fibre, bark, and leaves of the *Rhaphidiphora vitiensis*. In the same journal, the following year, February 5, 1881, appears the following:

"The much vaunted cure for neuralgia is found not to be the product of any particular plant, but rather a kind of herbalist's composition powder, for which the formula was prepared by a German resident of the Fiji Islands."

Neither of these paragraphs is accredited to any one; they, therefore, must rest solely upon the authority of the editor of the journal from which they are taken. To return to the article of Drs. Ringer and Murrell, which appeared in the London Lancet for March 6, 1880, the directions for using the drug are given as follows:

"The bundle without being unfastened is to be steeped in half a tumbler of cold water for twenty minutes; and the liquid is then squeezed from the bundle back again into the tumbler. A claret glass of the infusion is taken three times a day, about half an hour before each meal. The bundle is dried and hung up in a dry place to prevent moulding. It is said to answer for twelve months."

Our authorities in their experiments used a liquid extract, and gave it in eight cases of neuralgia of the various cranial nerves. Six were promptly cured, one relieved, and one unaffected. They state that the drug has no toxic symptoms. To determine its effects upon the body they gave two half-ounce doses to a person at half-hour intervals, and repeated it again in two hours. To another person they gave three two-dram doses at half-hour intervals without producing any symptoms beyond a slight drowsiness. It has no effect upon the pupil when applied to the eye, and it neither lessens nor increases the secretions of the mouth or skin, nor effects the sensation of the skin.

In January last Drs. Kidder, Griffith, Geo. Doering, the laboratory assistant, and myself, took Parke, Davis & Co.'s fluid extract of tonga with a view to determine its effects upon the excretions. All were in apparently good health. The drug was taken in doses of 4 c.c. at hourly intervals, until half a fluid ounce had been taken. All the urine passed until the following morning was examined for urea and uric acid, and the urine was examined in each case before taking the first dose of the drug. The notes of these experiments were furnished me by Dr. Kidder, who sums up as follows:

"Contrary to my expectations there was no increase in the excretion of uric acid. There was in each of these four cases a decided diminution in the excretion of urea—the variations in the excretion of uric acid being less obvious. There was no change in the pulse, temperature, or pupils. The only constant subjective symptom was a certain sense of lassitude or muscular fatigue, not disagreeable nor very decided. Two of the four experimenters noticed a tendency to cerebral congestion of short duration; one was slightly purged."

As I was one of the two in whom it produced a slight tendency to cerebral congestion, I will give the symptoms more in detail. The first effects noted were a ringing in the ears and a flushing of the face, my attention being directed thereto by an increase of the heat of the part. The most decided effects followed the third and fourth doses. There was a sense of fullness about the head, confined principally to the frontal region, and amounting at times almost to a frontal headache. There was likewise a heaviness about the eyes and a decided feeling of lassitude that was anything but unpleasant. These symptoms were transient, wearing off in about two hours. No after-effects were experienced; there was no action on the bowels, nor increase in any of the secretions.

While doing duty at the Dispensary tonga was administered in fifteen cases of neuralgia, and I have been able to get the results in all the cases but one. I will now proceed to give these cases in detail.

Case 1.—Had been suffering with a severe neuralgia for a day and a half, and the pain showed no evidence of abatement. All the cranial nerves seemed to be involved. The neuralgia was of that kind in which the slightest motion greatly intensified the pain, and it nearly always accompanied the menstrual period. At noon of the second day administered f ʒ i of the extract of tonga, and in somewhat less than three hours the pain had entirely subsided. The neuralgia returned in a mitigated form about 8 P. M., when another ʒ i dose of tonga was given, and the pains again disappeared, not to return. This patient has had occasion to use the remedy a number of times since, and it has never failed to give her relief in from one to three hours.

Case 2.—Has been a sufferer for years with neuralgia. The pains are intense, involving all the branches of the fifth pair. In the present instance her agony was evident to an observer. The attacks invariably lasted the whole of the day, the pain leaving sometime during the night after getting asleep; generally awoke in the morning free of pain. Gave fluid extract of tonga f ʒ i at 2 P. M., and in two hours afterwards the patient expressed herself as relieved; another dose was administered as a precautionary measure. There was no return of the neuralgia that day.

Case 3.—Was a physician. Is not subject to neuralgia. The present attack was most probably induced by the worry and exertion of a large practice. It came on in the afternoon, and the pain was of a stabbing character, in the temples and over the eyes. Took f ʒ ss of the tonga, and a number of other things besides, chiefly anodynes, administered by himself. Went to sleep and awoke relieved, but did not know what brought relief. On the afternoon of the day following, the pains returned with the same intensity and character. Took tonga in a ʒ i dose, and gained complete relief in a very short time. This last time he took the tonga alone purposely to test its efficacy. There was no further return of the neuralgic trouble.

Case 4.—Was a lady, who had been a neuralgic sufferer for seven or eight years. The attacks are frequent, and are confined to the right side, involving the orbital branches of the fifth pair. The pain is usually intense and throbbing, and the parts about the eye become red and swollen. The attacks, as a general thing, last for about two days and nights. The patient usually had recourse to hot applications and hypodermic injections of morphia, in the neighborhood of the seat of pain, to obtain relief, without, however, gaining complete relief. During one of her attacks f ʒ i of the fluid extract of tonga was administered, and in less than two hours after she was free of pain. The dose was not repeated. The remedy was used in subsequent attacks with like results, one dose of a f ʒ i being sufficient to cut short the attack.

Case 5.—This patient on getting up in the morning had severe pains in the frontal and occipital regions, and occasional darting pains through the temples. Had a violent attack of coughing the night previous, which he attributed to taking cold. Administered ʒ i of tonga at 10 A. M.; at 12 M. there was no meterial change, and another ʒ i dose was given. In less than two hours after taking the second dose the pains vanished.

Case 6.—This case is a very interesting one. The patient lives in a malarial district, exposed to the emanations from the Potomac flats. When first visited she was found suffering with severe neuralgic pains in the frontal and occipital regions; the whole scalp was tender to the touch. In addition she complained of paroxysms of pain in the right iliac region,

and soreness over the whole front of the abdomen. The day previous to that on which I first saw her, the oleaginous mixture had been prescribed for her, and the bowels had been thoroughly cleaned out, but the pains continued. Every afternoon she presented evidence of malarial complication—she was first chilly and then feverish—the attacks being mild; but the neuralgic pain in the head persisted during the night and morning. She had been in this state, in bed most of the time, for two days; moving about occasioned nausea, and sleep was fitful, for the reason that she could not comfortably lay her head in a favorable position, on account of the pain in the occipital region. In the afternoon gave her fluid extract of tonga f ʒ i, and repeated the dose in two hours. No effect resulted from the first dose: but following the second, she began to experience relief. After an interval of four hours the second dose was followed by a third, and this made the patient very comfortable. This was the only patient who felt any of the physiological effects of the drugs. She experienced a sense of languor and relaxation that was very conducive to sleep. I am confident this was a drug effect, for it corresponds with my own experience, and with what has been written by Ringer and Murrell. I am not aware that it was noticed by any of the other patients who took the remedy. The patient stated that after the first dose she felt convinced that the medicine would not relieve her, and was therefore very agreeably surprised at feeling better, after taking the second dose. The next morning she still felt comfortable—she had slept well during the night; but the scalp was still tender to the touch, and she felt that it would take but little to start the pain afresh. I now began to treat the afternoon complication with quinia, and there was no return of the neuralgia.

Case 7.—Has been subject to attacks of epileptiform neuralgia for a number of years. So violent are they that she sometimes becomes unconscious during the paroxysms of pain. The attack which I was called upon to relieve began in the early morning. The pain was excruciating, jumping from one nerve to another; as the patient expressed it, it seemed as if the pain must tear its way out of her head. It was in the scalp, in the eyes, teeth, and ears in succession; and at times, there were also violent pains over the heart, resembling angina pectoris. The extremities were cold, and to the patient the blood-vessels seemed to be conveying an icy-cold fluid. During the paroxysms she constantly tossed about the bed, throwing her arms, and moaning as if she were delirious. In this case tonga was of no avail. She took, in all, an ounce of the drug, in ʒ i doses every two hours. The patient thought that it mitigated the paroxysms somewhat; but this, I am inclined to believe, is doubtful, if her actions expressed the amount of her suffering. It certainly did not control them, neither did it abridge the duration of the attacks. The amount of the drug taken by this patient is the largest I have ever given continuously to one person. She complained of no drug effect, either at the time of taking the medicine or afterwards.

Case 8.—This patient, a man, awoke in the morning with a supra-orbital neuralgia of the left side. He took two ʒ i doses of the fluid extract of tonga, at an interval of two hours, but without effect. The pain wore off during the night. The patient is more or less subject to these attacks, and they are usually accompanied with nausea. They are generally cured by a brisk cathartic.

Case 9.—This patient was suffering with an attack of dental neuralgia, caused by a carious tooth; at the same time he was troubled with muscular rheumatism of the right deltoid muscle. The muscular neuralgia he thinks is inherited—his father suffered with it, and he is subject to attacks about once a year. Their usual duration is seven or eight days, reaching a culminating point about the third or fourth day, and then gradually declining—the crises being usually accompanied by a copious flow of urine, highly loaded with uric acid. At the height of the attacks, it has been customary for him to take to his bed for a day. He took three doses of the tonga, of a f ʒ i each, at two hours' intervals, without affecting the toothache; but much to his surprise, the pain in the shoulder sensibly lessened after taking the medicine, and all disappeared on the third day, which was usually the culmination of the attack. The patient in this case was our friend, Surgeon J. H. Kidder, and the unexpected relief obtained from the drug induced him to institute some experiments to endeavor to obtain some knowledge of the mode of action of the remedy. The result of these experiments, upon himself and others, has already been given.

Case 10.—This case is another of those chronic sufferers of neuralgia. The nerves involved are the supra-orbital branches of the fifth pair; and the attacks are usually brought on by fatigue, and exposure to the wind and cold. When I saw her she had been suffering with the pain for two days. I prescribed for her ʒ i of the fluid extract of tonga, with instructions to repeat the dose in about an hour. She obtained complete relief from the two doses. In a subsequent attack this patient tried tonga without benefit. The preparation which she used was that which was left over from her first attack. I have known it to be the case with a number of the fluid extracts, that they seem to lose their active properties after having been opened, and let stand for a length of time. The best illustration that I know of this, occurred while I was attached to the naval hospital at Yokohama, Japan. We had occasion to use a fluid extract of jaborandi, manufactured by Reed & Carnrick. When first used the preparation was very active, producing profuse diaphoresis and salivation; but after being set aside for several months, it apparently lost all its virtues, and doses of ʒ i and ʒ iss failed to produce results that followed ʒ ss doses in the first instance. Experiences with new remedies will therefore be very conflicting and disappointing until the active principle is extracted in some stable form.

Case 11.—This patient, a female, was troubled with neuralgia of the orbital branches of the fifth pair. The pain was of a dull, heavy character, and had existed for several days. Gave tonga ʒ i, and left instructions to repeat the dose every hour until relief was obtained. After the second dose the pain ceased, and the patient states that she has been freer from neuralgia since taking the medicine than before. It has never been claimed that tonga cures the neuralgic habit, but that it relieves the attack only; for this reason I am not inclined to attach much importance to the patient's statement; besides, none of the others have noticed such relief,

Case 12.—A case of neuralgia, that was relieved by two doses of the drug.

Case 13.—A case of supra-orbital neuralgia, that had existed for four days, relieved by one ʒ i dose of tonga.

Case 14.—A case of neuralgia accompanying the menstrual period. No relief was obtained from tonga.

These 14 patients include all, except one, whom I was unable to keep track of, to whom tonga was administered during the period which I have mentioned. It will be seen that it afforded prompt relief to all except three. From this, I think, we may conclude that we have in tonga an efficient drug for the relief of neuralgias. It is rather slow in its action, requiring about two hours for the full effects of the drug to be felt. It should be given in ʒ i doses, and repeated at intervals of about two hours.

Stigmata Maidis.—Our next new drug is a fluid extract prepared from the stigmata of corn. This, I have been told, has been used for a long time by the negroes of the South as a domestic remedy for affections of the bladder. Fortunately, in this case, there is a crystalline principle, which has been isolated, and we may therefore expect uniform results. In an article on the study of maize and maizenic

acid, by Dr. Fauthier, the conclusions are summed up under six heads:

1. The action of zea mays is always favorable in all affections of the bladder, whether recent or chronic.

2. Maizenic acid is the active principle, and alone possesses the therapeutic properties.

3. The diuretic action is not constant; and is due to the recovery of the affected organ, and not to the medicine.

4. The best results are observed in uric and phosphatic gravel, in acute cystitis, whether simple or due to gravel, and in mucous or muco-purulent catarrh.

5. In the cases treated, the ordinary remedies for these affections had been employed without benefit, while the maize never failed to effect a cure.

6. The maizenic acid has the power of dissolving calculi and calcareous concretions by its chemical action. Its use is indicated in cases of gout and rheumatism.

Dr. Busey, of this city, has tried the remedy in six cases of cystitis and pyelitis. He found it beneficial in all the cases in which it was employed. He states that it is a certain, but mild, diuretic when given in full doses at short intervals.

I have to report four cases where it was employed for the relief of cystitis, in three of which it was decidedly beneficial, and in one it was of no use whatever. The latter was an exceptional case, and no benefit was expected from this or any other remedy. The patient had been twice operated upon for stone, and the bladder was in a sacculated condition. The only measures that gave him relief were strong injections of nitrate of silver. The stigmata was given a fail trial in full doses at short intervals, but the results were nil.

Of the other three cases, the first occurred in the practice of Medical Director Gunnell. He reports the case as a troublesome one of chronic cystitis in a young lady. Several remedies had been employed by the attending physician—inf. digitalis and potassium acetate, fld. ex. buchu, and pareira brava, and others, without benefit. He was induced to try the fld. ex. stigmata maidis. The medicine was entirely agreeable to the patient, and the condition of the bladder began soon to improve, with diminution of the deposit of mucus and pus, and greater toleration of the urine. She has continued to improve. The medicine was given in teaspoonful doses every three or four hours. The patient at the same time was taking Rockbridge alum water, one pint daily, in four draughts, after the stigmata maidis.

Case 3.—This was a case of acute cystitis in a young man, and was due to urethritis. There was frequent desire to pass water, and, although controlled as much as possible, he was obliged to empty his bladder seven or eight times daily; not troubled at night. There was considerable pain on the passage of the urine, and vesicular tenesmus. The urine was loaded with pus and mucus. At first, gave the fld. ex. stigmata maidis in ʒ i doses four times daily, without any improvement in the condition; increased the number of doses to eight daily, or an ounce of the drug, and complete relief followed in two days. The pus first disappeared from his urine, leaving a rather large deposit of mucus, indicating a catarrhal condition of the bladder. Under the continued use of the remedy this grew less, until the mucus finally disappeared altogether.

Case 4.—This was an aggravated case in a man about seventy years old. He dates the first appearance of his bladder trouble twenty years ago, when he had retention of urine, caused by sleeping on the ground. Three years ago his cystitis became so bad that he was obliged to seek medical aid. All the usual remedies in such cases were tried without benefit. The patient had no control over the bladder whatever; he was obliged to stop and pass water whenever the desire seized him, wherever he might be. Sleep was disturbed very frequently during the night. At first the fluid extract of corn-silk was administered in ʒ i doses three times daily with no benefit; but relief was obtained immediately it was increased to ʒ i every two hours. The patient took the medicine steadily for about two months, and experienced the greatest relief from its use, gaining almost complete control over his bladder. I should state, in connection with this case, that there was an enlargement of the prostate, and the patient was in the habit of using a catheter to draw off his urine. It was while taking the stigmata maidis that he discovered that he never completely emptied his bladder, but that there was left a small amount of residual urine, which by its fermentation continued the inflammation. He soon learned to get rid of this also; and now passes a very comfortable existence for a man of his age, with an enlarged prostate. The stigmata exerted a marked palliative influence, and it failed to cure because the cause was constantly operating.

In the administration of this drug one thing should be insisted upon: it must be given in full doses at short intervals— ʒ i every two hours.

Cascara Sagrada.—This is from the bark of the Rhamnus purshiana, a species of buckthorn. It can hardly be considered any longer as a new remedy, its virtues having been well tested, and it having now a well-established place in the materia medica. Our experience with it, which has been extensive, has been uniformly favorable in the treatment of habitual, or chronic, constipation. In sufficiently large doses it is a powerful purgative; and its dose may be so regulated as to produce natural fœcal evacuations once daily. It is the only drug that I am acquainted with that so closely simulates nature in its action on the bowels. It is said to be best to combine it with one or two drops of the fld. ex. belladonna. I shall confine myself to but two of the many cases in which it has been used at the Dispensary. The first had been constipated for about seven weeks. He was directed to take 15 drops of the fluid extract of cascara sagrada on going to bed. After using it for six days the bowels became regular, and the movements were free and easy. In this case a larger dose than 15 drops caused the bowels to move oftener than once daily, and the stools were more or less liquid—an increase of five drops being sufficient to cause this. The second case was one of atony of the bowels following chronic dysentery. After recovering from the dysentery his bowels never moved except he employed cathartics; and when, finally, these ceased to act, he resorted to the daily use of enemas. At the time he commenced to take the cascara sagrada these had been employed for five years, his bowels never getting relieved in any other way. He took the fluid extract cascara sagrada in ʒ ss doses for about two weeks, and during that time he received a number of faint responses from his bowels, a sensation he had been a stranger to; but his main reliance was still upon the syringe. About this time he left his home for the purpose of visiting a neighboring city, and forgot to take his instrument along with him. To his intense satisfaction and surprise his bowels moved under the stimulus of the medicine alone. He ceased taking the medicine sometime ago, and, as he expresses his condition himself, his "bowels now move like a child's." This I take to be as great a triumph as cascara sagrada has achieved.—Dr. T. H. Streets, U. S. N., in *Proceedings Naval Medical Society* (vol. 1, No. 2).

Reports on New Drugs.—It is not a little interesting to note the history of the various remedies which have been candidates for professional notice during the past half century. Many have been announced with enthusiastic encomiums of their supposed efficacy and utility, based upon insufficient observation, and these have speedily sunk into deserved oblivion. Others have been introduced upon better grounds, but with hasty conclusions as to their properties, and perhaps exaggerated ideas of their value, so that, a few trials having

resulted in disappointment, they have fallen to the opposite extreme in the favor of the profession, to be restored sometimes, after long intervals and further investigation, to their true place in the materia medica.

The real value of unknown drugs can only be established by repeated and careful experimentation, and this is often difficult of carrying out in the hurry of a busy practice, or in the reluctance to the use of new and untried remedies, when the speediest restoration of the patient is desirable. It is therefore to the general interests of medical science that, wherever it is practicable, the physiological and therapeutic effects of new remedies should be observed and recorded; and perhaps with no class of professional men are opportunities with this view more unrestrained or convenient than among the medical officers of the Navy. With this view the Bureau of Medicine and Surgery distributed, in the spring of 1882, a number of the new remedies to various stations, with the request that they be tried and the results reported. Concisely stated, the following opinions were given regarding some of them:

Cascara Sagrada.—Dr. Dean, Naval Hospital, Philadelphia, reports: "This is a reliable and unirritating laxative and cathartic, but the fluid extract is nauseous and objectionable; the cordial is, however, much less so."

Dr. Gorgas, Naval Academy, says: "It is a certain cathartic, and in small doses an excellent laxative. In a case of chronic constipation in a child of four years this remedy afforded perfect relief."

Dr. Bloodgood, Naval Hospital, New York, observes: "It possesses undoubted virtues as a mild cathartic, and is not of unpleasant taste."

Cascara Amarga.—Dr. Bloodgood has tried this in several cases of consecutive syphilis, but without any perceptible results.

Stigmata Maidis.—Dr. Dean reports that this was tried in several cases of chronic cystitis, and, while they were not cured, the results were favorable in mitigating the severity of the symptoms.

Dr. Gorgas was able to speak very highly of it as a demulcent and diuretic.

Dr. Bloodgood states that in cases of acute and chronic cystitis its action was not remarkable.

Quebracho.—Dr. Gorgas used this remedy in several cases of asthma, and in one only was there marked benefit, but the relief here was immediate and complete.

Dr. Dean states that temporary relief followed in some cases, while in others there was no result.

Dr. Bloodgood found that in cases of cardiac hypertrophy, with dyspepsia, in which it was tried, there was no relief.

Piscidia Erythrina (*Jamaica Dogwood*).—Dr. Suddards, Naval Hospital, Norfolk, Virginia, finds this agent to be slightly anodyne in its effects in mild cases of neuralgia, and in large doses it produces sleep.

Dr. Dean tried it in three cases in full doses; no effect in two, and sleep induced in the third; it did not appear reliable as a hypnotic.

Dr. Bloodgood found only negative results.

Yerba Santa.—Tried by Dr. Dean in several cases of chronic bronchitis and asthma, with no decided benefit.

Dr. Bloodgood reports like results in cases of chronic pneumonia and secondary syphilis.

Manaca.—Dr. Bloodgood states that this was carefully tried in cases of chronic rheumatism. Full doses produced severe headache, diarrhœa, tenesmus, and bloody stools, but there were no beneficial results.

Sanguis Bovis Exsiccata.—This was tried by Drs. Dean and Bloodgood without benefit; the latter reporting nausea from its use.—Dr. A. Hudson, U. S. N., in *Proceedings Naval Medical Society* (vol. 1, No. 2.)

The Action of Jaborandi in Typhoid Fever.—In the British Medical Journal of the 6th of May last I published a short report of the success attending sudorific treatment in the early stages of typhoid fever, and since then I have had further opportunities of testing the efficacy of this plan of treatment by the administration of jaborandi, which I believe to be one of the most valuable remedies we possess in the early stages, not only of febrile but in acute and inflammatory affections, whether arising from cold, blood poisoning, or other causes.

I believe jaborandi to possess the power of eliminating from the human system almost any specific poison, by means of the skin, if resorted to at once, and before that poison has had time to set up its peculiar action.

My attention was first called to this plan of treatment many years ago, by hearing of a gentleman who held the position of resident physician to a large fever hospital. His belief was that he had frequently contracted both typhus and typhoid fever in the discharge of his duties, and his novel mode of arresting it was to mount his horse and ride for ten or fifteen miles, regaling himself on the road with sundry glasses of whisky-punch. He would then return in a bath of perspiration, and feel no more of his dreaded enemy.

A short time after hearing this account I saw a lady who had been suddenly taken ill with all the premonitory symptoms of typhoid, and as she had suffered but a short time before from that disease, she was convinced in her own mind of the nature of the attack, and on being questioned said: "I feel exactly as I did when I was sickening for typhoid fever."

I immediately resorted to active sudorific treatment, assisted by numerous blankets, covering all with a mackintosh sheet to prevent the least evaporation. I then kept up the action of the skin till all the abnormal symptoms had subsided. In less than ten hours from the time of commencing the treatment the patient was convalescent, only complaining of weakness. That is more that twelve years ago, and since then I believe I have been the means of arresting a very large number of similar cases.

The great difficulty I found in most cases was to procure a free action of the skin; if I could only produce that I had little fear for the result. The introduction, therefore, of jaborandi as a therapeutic agent was hailed by me as one of the most valuable additions to our materia medica. I look on it in the early stages of fever in the same light as salicylate of soda in acute rheumatism. I have found it reduce the temperature to its normal standard within a few hours, removing at the same time all abnormal symptoms.

The preparation of jaborandi which I find the most convenient and reliable is a fluid extract made by Messrs. Ferris & Co., of Bristol. The dose being small, it is not likely to produce nausea or sickness. Some patients are more impervious to its effects than others. So I begin with the minim dose, gradually increasing it every hour till the full action is obtained. The effects are more readily induced by putting the patient into bed between the blankets.

The sweating usually commences in from three to five minutes if the dose is sufficiently large and the preparation a reliable one. If there is no action of the skin from the first dose within the hour I repeat it, giving double the quantity for the next. In conclusion, I must say that I have the most implicit confidence in this plan of treatment, and believe that jaborandi will effectually stop an attack of fever if taken in its first stage. But it frequently occurs that the medical man does not see till it is too far advanced to derive benefit from it.—Richard Ryder, M. D., L. R. C. P. Ed., L. R. C. S. I., in *Med. Press*, June 28, 1882.